

CENSUS

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History

Part A

Chapter 1.
Introduction and Overview

Chapter 2.
Planning the Census

Chapter 3.
Geography, Addresses, and
Questionnaire Printing and Labeling



1980

**Census of
Population and
Housing**

PHC80-R-2A

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Questionnaire Printing and Labeling

Issued September 1986



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ACKNOWLEDGMENTS—Many persons participated in the various activities of the 1980 census. Primary direction of the program was the responsibility of **Daniel B. Levine** and **George E. Hall**, then Associate Directors for Demographic Fields, assisted by **David L. Kaplan** and **Earle J. Gerson**, then Assistant Directors, and **Peter A. Bounpane**, Assistant Director for Demographic Censuses, in conjunction with **James W. Turbitt**, **Curtis T. Hill**, and **Rex L. Pullin**, then Associate Directors for Field Operations; **W. Bruce Ramsay**, then Associate Director for Information Technology; **Barbara A. Bailar**, Associate Director for Statistical Standards and Methodology; and **James D. Lincoln**, then Associate Director for Administration.

This report was prepared in the Data User Services Division by the Census History Staff, under the general supervision of **Frederick G. Bohme**, Chief. **Thomas A. Jones**, then 1980 Census Historian, wrote chapters 1, 2, and 3 with the assistance of various people throughout the Census Bureau. The Publication Services Division provided publications planning and design, editorial review, composition, and printing procurement.

Library of Congress Cataloging-in-Publication Data

Census of population and housing (1980). History.
1980 census of population and housing.

PHC80-R-2A.
LC holdings, until complete, listed in Shelflist
only.
1. United States—Census, 20th, 1980. 2. United
States—Statistical services—History. 3. United
States—Census—History. I. United States. Bureau of
the Census. II. Title.
HA201 1980ac 304.6'0723 86-600030



Census 1980

By the President of the United States of America

A Proclamation

Our Constitution requires that there be a census of the people in the United States once every ten years. The Twentieth Decennial Census will be taken beginning April 1, 1980.

It is vitally important to everyone that this census be a complete and accurate report of the Nation's population and resources. Its results determine the representation of the States in the House of Representatives, the redrawing of congressional boundaries, and State and local redistricting. They also provide the basis for distributing large amounts of funds under various Federal programs among the States and communities.

The census is also important for a broader purpose. Americans are a free and mobile people. Significant and rapid changes take place in our country. To better understand ourselves and make intelligent decisions for the future, we depend greatly on our census.

NOW, THEREFORE, I, JIMMY CARTER, President of the United States of America, do hereby declare and make known that under the law it is the duty of every person to participate in the census by answering all questions in the census schedule applying to him or her and the family to which he or she belongs, and to the home being occupied.

Every person in the United States can be sure that there will be no improper use of the information given in the census. Answers cannot be released in any way which will harm the individual. By law individual information collected will not be used for purposes of taxation, investigation, or regulation, or in connection with military or jury service, the compulsion of school attendance, the regulation of immigration, or with the enforcement of any national, State, or local law or ordinance.

IN WITNESS WHEREOF, I have hereunto set my hand this sixth day of November, in the year of our Lord nineteen hundred seventy-nine, and of the Independence of the United States of America the two hundred and fourth.

A handwritten signature in cursive script that reads "Jimmy Carter".

Preface

This is the first part of the *1980 Census of Population and Housing: History* (PHC80-R-2). Chapter 1 is a general discussion of most major topics related to the decennial census. Chapter 2, on planning, concentrates on consultation and contacts with data users and on various testing stages. Chapter 3 deals with geography, addresses, and questionnaire printing and labeling.

Later parts will present greater detail on some of the topics outlined in chapter 1, such as publicity, the field enumeration, data processing, data products and dissemination, research, evaluation and experimentation, litigation, the censuses of Puerto Rico and the outlying areas, etc. The detailed treatment will include, where appropriate, a discussion of some of the problems encountered in the implementation of the census plan.

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Chapter 1. Introduction and Overview

INTRODUCTION

The 1980 Census of Population and Housing¹—the 20th in a chain of censuses that have been taken every 10th year (in years ending in "O") since 1790—was conducted as of April 1, 1980, by the Bureau of the Census, an agency of the U.S. Department of Commerce. The enumeration covered the population and housing characteristics of the 50 States, the District of Columbia, Puerto Rico, and the outlying areas under U.S. jurisdiction or sovereignty. The 1980 census (the decennial census) counted and obtained characteristics for 226,545,805 persons and 88,411,263 housing units in the United States and an additional 3,565,376 persons and 1,082,288 housing units in Puerto Rico and the outlying areas.

History

The eminent 19th century French statistician, Alexandre Moreau de Jonnès, observed: "The United States presents in its history a phenomenon which has no parallel. It is that of a people who instituted the statistics of their country on the very day when they formed their government. . . ."

De Jonnès' observation acknowledges the fact that the U.S. Constitution, ratified in 1789, required an enumeration of the population at least every 10 years. The constitutional mandate for a census stemmed from a compromise between the large and small States at the Constitutional Convention in 1787. This compromise gave each State equal representation in the Senate, but linked representation in the House of Representatives to each State's population. Thus, article 1, section 2 of the Constitution called for a census as the means of equitably apportioning representatives among the States. This constitutional mandate remains the primary reason for conducting the census.

The Census Bureau was required by law to provide the President, by January 1, 1981, with the final official State population counts from the 1980 census. At the same time, it forwarded to him the number of representatives to which each State was entitled in the House of Representatives.

Related to apportionment is the delineation of congressional and legislative district boundaries. Since the Supreme Court's "one person, one vote" rulings of the 1960's, redistricting has been based on the concept that legislative districts should have nearly equal populations. Under the provisions of a law enacted in 1975 (Public Law 94-171), the Bureau was required to produce population data for delivery to the States by April 1, 1981. These data were for geographic areas outlined in plans submitted by the officers or public bodies in a State which had initial respon-

sibility for the legislative apportionment or districting of the State.² It should be noted that, while the Census Bureau provided data which could be used for redistricting, it did not draw the congressional or State legislative district boundaries.

The decennial census has, of course, many uses other than apportioning seats in the House of Representatives and drawing district boundaries. Census data are also used for allocating Federal and State funds under various grants-in-aid and revenue-sharing programs, in formulating public policy at all levels, and in private-sector decisionmaking, as well as for many other purposes. Legislation passed during the 1970's tied the distribution of Federal revenue-sharing funds to population totals and/or characteristics; this action contributed to a heightened public awareness of and support for the 1980 census.

The first census was conducted in 1790 by U.S. Marshals and their assistants under the direction of the Secretary of State. The act authorizing this census, with minor modifications and extensions, governed the taking of the censuses through 1840. The inquiries in 1790 were limited to only six items: the name of the head of the family and the number of persons in each household of the following descriptions—free White males 16 years and older; free White males under 16; free White females; all other free persons (i.e., free Blacks); and slaves.

There was a significant growth in the number of inquiries between 1790 and 1840. By 1840, data were also being gathered on education, literacy, and occupation. In addition to the population census, censuses of manufactures were conducted beginning in 1810, and of agriculture beginning in 1840.

The first major innovation in American census-taking was ushered in with the 1850 census. Prior to that time, only the names of family heads had been collected. The new law for the 1850 census provided for collecting the names and characteristics for each person counted.

The 1880 census law provided for the next major improvement in census methods. For the first time, specially appointed supervisors and enumerators took the census instead of the U.S. Marshals and their assistants.

The 1880 census was an encyclopedic undertaking that included hundreds of minor inquiries in addition to the basic population questions. Due essentially to the vast scope of this census, publication of the detailed results was not completed until just before the 1890 enumeration. The 1890 census was similar in scope to 1880, but data processing was accelerated by the introduction of punchcards and electric tabulating machines. There was a sharp reduction in the range of the 1900 census.

The censuses from 1790-1900 were conducted by temporary staffs that were disbanded after each count was completed and

¹Also called the Twentieth Decennial Census, as in the Presidential Proclamation, or simply the decennial census.

²The State plans had to meet criteria established by the Secretary of Commerce.

the results published. Some observers, particularly in the latter half of the 19th century, noted that the *ad hoc* nature of census-taking was inadequate in several respects: There was a lack of continuity and experience in census work, the enumerations had to be organized in great haste, and the accuracy of the statistics was impaired. Based on these observations and recommendations from Government and the private sector, Congress established a permanent Bureau of the Census in 1902.

With an ongoing organization, certain of the minor inquiries and the census of manufactures could be conducted separately from the decennial census.³ There were some improvements in collection methods and a few changes in census questions in the enumerations of 1910, 1920, and 1930, which were generally of the same scope as the 1900 census.

The 1940 census was, in many ways, the first modern census. One of the major innovations was the use of sampling, which involved asking some of the questions of only a fraction of the population. The 1940 census was also the first to obtain a variety of facts on the general conditions of the Nation's housing.

The 1950 census brought the use of one of the first electronic computers, UNIVAC I, which was delivered in 1951 and used to tabulate a portion of the data. Nearly all of the data processing for the 1960 census was done by computer. An electronic device for "reading" the census schedules—FOSDIC (film optical sensing device for input to computer)—was also used in this and subsequent censuses. Questionnaires were designed so that the answers could be indicated by marking small circles; the completed questionnaires were microfilmed and then FOSDIC scanned the microfilm copy. The FOSDIC-readable schedules were filled by enumerators who transcribed information from regular questionnaires filled out by householders.

In the 1960 census, the only population questions asked on a 100-percent basis (asked of everyone) were age, sex, race, marital status, and relationship to head of household.⁴ Eight housing items were also asked on a 100-percent basis, but most population and housing questions applied only to a sample of the housing units. This pattern of asking only a few items of every household, which was employed to reduce respondent burden as well as processing costs, was followed in subsequent censuses.

Prior to 1960, census enumerators used a "conventional" door-to-door procedure, visiting each housing unit to complete a census questionnaire. The 1960 census was the first in which the mails were used extensively to collect population and housing data. The field enumeration was preceded by delivery to every housing unit of a questionnaire that contained the basic 100-percent questions. The householder was asked to complete the questionnaire and hold it until an enumerator visited the housing unit to pick it up. (Self-enumeration had been used on a very limited scale previously, but this was the first time it was made a major part of the decennial procedure.) In areas containing about four-fifths of the population, the enumerator picked up the 100-percent questionnaire, and left another containing the sample population and housing questions at every fourth housing unit,

requesting that the respondent fill it out and mail it to the census district office. When these questionnaires were returned, the responses were transcribed to the special FOSDIC schedules. In rural areas, the sample information was obtained during the enumerator's visit and recorded directly on the FOSDIC schedules.

In terms of land area, roughly 53 percent (excluding Puerto Rico and the outlying areas) was covered by the conventional method. If Alaska were excluded, the figure would be 44 percent.

The mails were used even more extensively in the 1970 census than in the 1960 census. Areas containing approximately three-fifths of the housing units received questionnaires by mail and were asked to complete them and mail them back. Some of the households received short forms containing only the 100-percent questions, while those designated for the sample received long forms containing the 100-percent and additional questions. The questionnaires were designed in a format that could be read by FOSDIC. In the areas where this procedure was used, enumerators contacted only those housing units and households for which questionnaires were not returned or the answers were incomplete or inconsistent. In the remainder of the country, consisting mostly of rural areas and small towns, mail carriers left a census form containing the 100-percent questions at each residential housing unit on their routes. An enumerator visited each housing unit to collect the completed questionnaires, determined which units were in the sample, and asked the additional questions for these units.

In the 1970 census, changes in subject content over 1960 were relatively minor. The only population data collected on a 100-percent basis related to the same five subjects (age, sex, race, marital status, and relationship to household head) that had been collected on a 100-percent basis in 1960. In an effort to reduce response burden further while still maintaining a sample large enough to produce data for small areas, some questions were asked of either a 15-percent or a 5-percent sample of housing units, with a number asked for both, thus constituting a 20-percent sample. Again, a number of housing items were covered on a complete-count basis, and the remainder were on a sample basis similar to that used for the population inquiries.

The method of enumeration for the 1980 census was not radically different from that for 1970, though there were some significant developments: (1) the mailout/mailback (mail census) area was extended to areas containing 95.5 percent of the housing units, (2) new procedures for improving the coverage of the population were introduced and 1970 procedures were enhanced, and (3) the most extensive and creative publicly campaign for any census was undertaken to encourage public support. The questionnaires contained about the same number of items as the previous census, but there were some subject content changes reflecting new data needs. The sample design was different (see "Content and Sample Design"), but the general approach of asking only a few basic questions of everyone and the more detailed items of a sample of the population was the same as in 1960 and 1970.

Census Law: Title 13, United States Code

The Constitution does not prescribe how the census should be conducted, which questions are to be asked, or other vital aspects of census-taking; instead, it empowers the Congress to

³The censuses of agriculture were conducted as part of the decennial census through 1950.

⁴The term "head of household" was not used in the 1980 census; the census questionnaire asked for each person's relationship to the "person in column 1." Respondents were instructed to enter in column 1 the name of one of the household members in whose name the housing unit was owned or rented.

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conduct the census in "such Manner as they shall by Law direct." Congress passed special acts for the taking of each census from 1790-1920 that gave quite detailed instructions about how to conduct the enumeration and which questions to ask. In 1929, Congress passed the Permanent Census Act, under which the 1930 census was taken. The most notable feature of this act was the discretion it gave to the Secretary of Commerce (by delegation of authority, to the Director of the Census) with regard to conducting the census. Modifications to the 1929 act, and additional legislation covering the census of housing, governed the 1940 and 1950 censuses.

The basic law under which the 1980 census was taken was title 13 of the United States Code (see app. 1A for pertinent sections), which was codified in 1954 and amended several times over the ensuing years. Like the 1929 act, it gives the Secretary of Commerce discretion to enact census plans, subject to executive and congressional review.

Title 13 does not specify which questions are to be asked. It does require that the Census Bureau advise Congress of the general subject content 3 years before the census and on the specific questions, 2 years before. The title also does not specify the method of enumeration, but it contains provisions relating to the areas to be covered, and the date ("within 9 months after the census date") for delivering State population counts to the President.

The title requires that individuals answer the census. Anyone 18 years of age or older who willfully neglects or refuses to answer the census may be fined up to \$100. Anyone who gives false answers is subject to a fine of up to \$500.⁵

The same law that makes answering the census mandatory provides strict confidentiality for the information gathered, stating that: "Neither the Secretary, nor any other officer or employee of the Department of Commerce or bureau or agency thereof, may . . .

- (1) use the information furnished under the provisions of this title for any purpose other than the statistical purposes for which it is supplied; or
- (2) make any publication whereby the data furnished by any particular establishment or individual under this title can be identified; or
- (3) permit anyone other than the sworn officers and employees of the Department or bureau or agency thereof to examine the individual reports."

All employees of the Census Bureau must take an oath at the start of their employment and periodically thereafter to protect the confidentiality of information gathered in the census. Any employee who wrongfully discloses census information is subject to a fine of up to \$5,000 and/or imprisonment up to 5 years.

Census records are by law confidential for 72 years from the time the information was collected. Many people rely on copies of their census records to prove age or identity, and the Census Bureau releases such information only to those persons, their authorized representatives, or legal beneficiaries upon proof of death.

⁵In 1970, in addition to the fines, there was also provision for minor jail terms for refusal to answer or answering falsely, but this provision was dropped for 1980.

Bureau of the Census

The Bureau's headquarters is in the Washington, DC suburb of Suitland, MD. It has processing and operational offices in Jeffersonville, IN, and Pittsburg, KS, where large-scale clerical operations are conducted, and regional offices in 12 cities throughout the country—Atlanta, GA, Boston, MA, Charlotte, NC, Chicago, IL, Dallas, TX, Denver, CO, Detroit, MI, Kansas City, KS, Los Angeles, CA, New York, NY, Philadelphia, PA, and Seattle, WA. Two large processing sites were set up for the 1980 census operations in New Orleans, LA, and Laguna Niguel, CA; these offices closed in early 1982.⁶ To supervise the field enumeration, a regional census center was set up in each regional office city. The twelve centers directed the work of more than 400 temporary district offices that were opened throughout the country.

Planning, direction, and support services were provided by the Bureau's permanent staff. (See app. 1B for the Bureau's organization chart.) This staff was augmented for the peak periods of census operations—particularly in the areas of training, publicity, and processing—and then reduced as operations came to a close. By far, the biggest component of the census staff was the large numbers of temporary workers hired for the field offices and processing centers.

Census Period and Census Day

The 1980 census involved several major overlapping phases, altogether extending over the period 1973-83 and involving the following: Planning and preparation, data collection, data processing, data dissemination, and evaluation.

Census Day for 1980 was April 1, and all census questionnaires generally were to be completed giving information as of that date, even if they were filled days or weeks later.⁷ Census Day has been April 1 in each census since 1930. (For prior dates, see app. 1C.) This has been deemed the most suitable reference date for the census because of two major factors: weather conditions and the likelihood that people will be at their usual places of residence. For instance, winter weather would impede the enumeration in some areas if Census Day were held much earlier, and people are more likely to move or be away on vacation in the summer months.

In order to complete the field enumeration before the spring thaw in northern and western Alaska, Census Day there was January 22, 1980.

As part of the agreement with the local government, Census Day for the Trust Territory of the Pacific Islands (excluding the Northern Mariana Islands) was September 15, 1980; this date was chosen to facilitate the use of teachers as enumerators.

Scope

The 1980 Census of Population and Housing also included two small surveys—the Components of Inventory Change Survey, which obtained information on counts and characteristics of the housing units that changed or stayed the same between 1973

⁶The Jeffersonville facility was also a major site of 1980 census processing.

⁷Several questions refer to a person's activity or condition at a point in time other than Apr. 1, 1980 (e.g., "Where did this person live five years ago (Apr. 1, 1975)?" "Did this person work at any time last week?," or "During 1979 did this person receive any income from the following sources?").

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and 1980; and the Residential Finance Survey, which was a survey of residential properties to obtain data on mortgages, shelter costs, selected housing characteristics, and owner characteristics.

Area covered—The territory covered by the 1980 census included the 50 States and the District of Columbia (the populations of these 51 units make up the official population of the United States), Puerto Rico, and the outlying areas—Guam, the U.S. Virgin Islands, American Samoa, the Northern Mariana Islands, and the balance of the Trust Territory of the Pacific Islands.⁸ The Canal Zone, which had been enumerated in each census from 1920 to 1970, was not part of the 1980 census; this change was a result of a treaty between the United States and Panama, ratified by the Senate in 1978, which provided for gradual Panamanian control over the zone. A number of other areas under the jurisdiction or control of the United States—Johnston Atoll, Midway, Wake, and miscellaneous other islands—were either uninhabited or had counts supplied for them by other Federal agencies.

Residence rules—All persons living in the United States on Census Day were covered in the census, including foreigners having their usual residence in the United States, whether they were legal or illegal aliens.⁹ Included were persons working or attending school here and members of their families living with them. Foreigners temporarily visiting or traveling in the United States or living on the premises of an embassy, ministry, legation, chancellery, or consulate were not enumerated. Procedures were established to count U.S. residents who were short-term travelers abroad, but U.S. citizens residing overseas (including Federal civilian employees, students, and Armed Forces personnel stationed there) were not directly within the scope of the census.

As in every preceding census, each person was counted as an inhabitant of his or her usual place of residence, which generally meant the place where the person lived and slept most of the time. This was not necessarily the same as the person's legal or voting residence. (Rules were established for certain categories where residence was not obvious; see app. 1D.)

Unit of enumeration—The basic unit of enumeration was the housing unit, occupied or vacant. Population characteristics were obtained for each person living in an occupied housing unit (a household) and housing characteristics were obtained for occupied and vacant units. A housing unit was defined as a house, an apartment, a group of rooms, or a single room, occupied as a separate living quarters or, if vacant, intended for occupancy as a separate living quarters. Separate living quarters were those in which the occupants or intended occupants lived and ate separately from other persons in the building and which had direct access from the outside of the building or through a common hall. Boats, tents, vans, caves, and the like were included in the housing inventory only if they were occupied as someone's usual place of residence. Vacant mobile homes were included

⁸The Northern Mariana Islands were part of the Trust Territory of the Pacific Islands at the time of the census, but were treated separately for purposes of collection, tabulation, and presentation of census data. Their Census Day was Apr. 1, 1980, as opposed to Sept. 15 for the rest of the Territory.

⁹While illegal aliens were to be counted in the census, no attempt was made to identify them as such.

provided they were intended for occupancy on the site where they stood.

Some people live in group quarters (college dormitories, military installations, prisons, hospitals, orphanages, convents, etc.) instead of housing units. Characteristics were collected for the group quarters population in a separate operation from the enumeration of housing units.¹⁰ If a living quarters contained 9 or more persons unrelated to the resident owner or renter, or 10 or more unrelated persons, it was also considered a group quarters and not part of the housing inventory and no data were collected on the housing characteristics.

PLANNING AND DESIGN

In a certain sense, one decennial census generally overlaps another. Planning for the 1980 census began while the last phases of the 1970 census were still underway—records were kept and experiments were carried out in the knowledge that they would be helpful in planning the 1980 census. Funding for formal 1980 census planning began in July 1973 (fiscal year 1974). The planning process included a review of the experiences in the 1970 census, consultation and contacts with data users, congressional review, and a series of tests of procedures and content.

One important decision reached early in the planning process was to expand the use of the mails in 1980. The 1970 experience had proved successful, with 85.6 percent of the households in mail census areas cooperating by mailing back their questionnaires. The followup work on incomplete and nonresponse cases was eased considerably by the fact that the bulk of the incomplete questionnaires were completed through telephone calls to the particular households. Furthermore, a test conducted during the 1970 census confirmed the feasibility and desirability of extending the mail method to rural areas and small towns. Because of these results and other factors, the mail census method was used in areas which, in 1980, contained 95.5 percent of the population.

A key element in the planning process was the need to improve coverage of the population. The fact that the decennial census misses people has been known since the first census. Systematic measurement of undercoverage, introduced in the 1950 census, has shown that some improvement in coverage occurred in the succeeding censuses. For 1970, it was estimated that 5.3 million people, or 2.5 percent of the population, had been missed. Also, as in previous censuses, Blacks had been disproportionately undercounted. While only 1.9 percent of Whites were missed, it was estimated that 7.7 percent of Blacks were not counted in the 1970 census.¹¹ Limitations in the administrative data (birth, death, and migration records) used to estimate population, and undercount, did not allow calculating the undercount for other minority groups—Hispanics, American Indians, and Asians and Pacific Islanders.

For a number of reasons, the issue of the undercount, and especially its disproportionate impact on minority groups, took on great significance for 1980. For example, the differential under-

¹⁰The places with group quarters population were called "special places"; these sometimes contained regular housing units.

¹¹The availability of new figures (on emigration, for instance) allowed a reestimation of 1970 census undercount in 1981. It was estimated that 4.7 million people were missed in 1970, or 2.2 percent of the population. The undercount rate for Blacks was 7.6 percent and for Whites, 1.5 percent.

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count affected the delineation of legislative districts of equal size and the annual allocation of billions of dollars of Government funds. Major efforts went into identifying methods for improving coverage, particularly for hard-to-enumerate segments of the population. The goals of coverage improvement in the 1980 census were (1) to attain a relatively low overall undercoverage rate and (2) to reduce the coverage differential between Whites and minorities.

The Census Bureau took two main approaches toward achieving these goals. First, it undertook a number of special publicity and outreach efforts to make people more aware of the census, to explain the importance of census data, and to convince people that their responses were confidential. Special efforts were designed to reach minority groups. One of these was the Bureau's Community Services Program, in which over 200 community services specialists contacted leaders of community-based minority organizations and American Indian reservations to obtain their active support for the census.

The second approach was to improve census-taking procedures to reduce the possibility of people being missed. Some of the coverage-improvement programs used in 1970 were revised and expanded, and some new procedures were introduced for 1980. The major improvements were in several areas: (1) the procedures for compiling address lists, which were used as a control in the mailout and receipt of the census questionnaires, (2) matching to census records the names of individuals (drivers' license lists) living in selected hard-to-enumerate areas to determine whether those individuals had been counted, (3) rechecking the occupancy status of units that had been classified vacant or nonexistent to ascertain that no household had been missed, (4) establishing special procedures for counting the transient populations, and (5) giving local officials the opportunity to review population and housing-unit counts for their area and have any complaints resolved in cooperation with the responsible census district office.

Census content, or what questions would be asked, was another major focus of 1980 census planning. In this regard, the Bureau's goals were to meet the data needs of the 1980's without burdening the public with too many inquiries. As in 1970, most questions were asked just of a sample of the population, and only the basic population and housing items were asked of everyone. The 1970's ushered in new concerns and data needs (e.g., more detailed data on minority groups, transportation, housing costs, etc.); there were requests from various sources for the addition of new inquiries. The concern over respondent burden limited the number of questions that could be asked, and set up a give-and-take situation among various competing user needs. Some of the questions asked in 1970 were no longer deemed sufficiently necessary and could be dropped.

Consultation and Contacts With Data Users

In planning the 1980 Census of Population and Housing, the Census Bureau consulted a broad spectrum of data users. It received advice on all aspects and phases of the census from several census advisory committees, whose members were appointed by the Secretary of Commerce and represented academic institutions, professional and business associations, community and national service organizations, consumer interests, elected public officials, and the clergy. There were three

committees consisting of members of the American Statistical, American Economic, and American Marketing Associations, separate committees on population and housing, and three minority advisory groups representing Blacks, Hispanics, and Asian and Pacific Islander Americans. Regional meetings held with American Indian and Alaska Native groups were forums for an exchange of ideas on how best to count them. The Federal Agency Council for Demographic Censuses, comprised of representatives of more than 90 Federal agencies, outlined Federal data needs, helped advise on census content, and reviewed other matters related to the census. Participants in local public meetings held throughout the country suggested improvements for the 1980 census. Meetings were also held with State planning agency officials to get their views. A "blue-ribbon" panel of the National Academy of Sciences/National Research Council reviewed census plans and made recommendations. Extensive contacts were made with national and community-based minority organizations to inform these groups of plans and to gather comments.

Congressional Review

The Census Bureau's plans for the 1980 census underwent extensive congressional review—through oversight committees, General Accounting Office audit teams, and the appropriations committees. Numerous hearings were held before the Bureau's House oversight committee (the Subcommittee on Census and Population of the Committee on Post Office and Civil Service) and Senate oversight committee (the Subcommittee on Energy, Nuclear Proliferation, and Federal Services of the Governmental Affairs Committee). The General Accounting Office conducted and published a number of studies of 1980 census proposals. Plans were also reviewed by the House and Senate committees responsible for funding the census.

Pretest and Dress Rehearsal Censuses

One of the most important components of the planning for the 1980 census was the series of pretests and dress rehearsals. The pretests were designed to examine the feasibility and cost-effectiveness of alternative or new field operations, enumeration procedures (particularly those designed to improve the coverage of the population), and questionnaire content items. The major tests were the National Content Test (1976), which was devoted entirely to testing alternative question formats and wordings, and tests primarily of census procedures in Travis County, TX (1976), Camden, NJ (1976), and Oakland, CA (1977). The latter three pretests were "mini-censuses" in which most facets of enumeration were studied. In addition, there were a number of other tests designed to try out specific procedures or questionnaire content items, some of which were held as early as 1975.

The dress rehearsal censuses were the final runthroughs of procedures planned for the 1980 census. These were conducted in 1978 in the Richmond, VA, area, in two counties in southwestern Colorado, and in a section of lower Manhattan in New York city—areas representing the different types of conditions to be encountered nationally. The aim was to avoid testing any new procedural and questionnaire content alternatives and to change only those methodologies or questions that proved prob-

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lematical. It was necessary to introduce a limited number of untested procedures or operations into the dress rehearsals, and some procedural and questionnaire content changes had to be made as a result of the dress rehearsal experiences.

There was an extensive evaluation process for the tests, consisting of formal statistical calculations, time studies, reports based on staff observation visits to field offices, and reviews at headquarters.

1980 Census Content

100-percent population items

Household relationship*
Sex
Race*
Age
Marital status
Spanish/Hispanic origin or descent*

100-percent Housing items

Number of housing units at address
Complete plumbing facilities*
Number of rooms in unit
Tenure (whether the unit is owned or rented)
Condominium identification**
Value of home* (for one-family owner-occupied units and condominiums)
Rent (for renter-occupied units)
Vacancy status
Duration of vacancy

Sample population items

School enrollment
Educational attainment
State or foreign country of birth
Citizenship and year of immigration
Current language and English proficiency**
Ancestry*
Place of residence 5 years ago
Activity 5 years ago
Veteran status and period of service
Presence of disability or handicap*
Children ever born
Marital history
Employment status last week
Hours worked last week
Place of work
Travel time to work**
Means of transportation to work*
Persons in carpool**
Year last worked
Industry
Occupation
Class of worker
Work in 1979 and weeks looking for work in 1979*
Amount of income by source in 1979*

Sample housing items

Number of units in structure
Stories in building and presence of elevator
Source of water
Sewage disposal
Year building built
Year moved into this house**
Heating equipment
Fuels used for home heating, water heating, and cooking
Costs of utilities and fuels*
Complete kitchen facilities*
Number of bedrooms
Number of bathrooms
Telephone
Air conditioning
Number of automobiles*
Number of light trucks and vans**
Homeowner shelter costs for real estate taxes, fire and hazard insurance, and mortgage**

Derived items (illustrative examples)

Families
Family type and size
Family income
Poverty status
Population density

Household size
Persons per room ("overcrowding")
Institutions and other group quarters
Gross rent
Farm residence

*Changed relative to 1970

**New item for 1980

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Content and Sample Design

The content of the 1980 census was not substantially different from the 1970 content. Some questions were new for 1980, while some 1970 items were dropped. Similarly, some questions asked on a sample basis in 1970 were asked on a 100-percent basis in 1980, and vice versa. Two main questionnaires were used in the 1980 census—the short form containing the basic, or 100-percent, population and housing questions asked for all persons and housing units; and the long form containing the basic items plus the additional questions asked of a sample of the population and housing units. (See app. 1E for a facsimile of the 1980 census long-form questionnaire.)

For most of the country, the long form was used in one out of every six housing units. In counties, cities, and similar governmental units with estimated populations below 2,500, the sampling rate was one in two; the purpose of this higher sampling rate was to provide reliable data for these small areas to meet the needs of certain Federal programs. Together, the respective samples of 16.7 percent and 50 percent meant that about one-fifth of the population nationwide was enumerated on the long form.

There was space on both the short and long forms for enumerating up to seven people in each household. If there were more than seven people in a household, the respondent was instructed to complete the form for seven people and mail it in. Since item 1 on the questionnaire called for a separate listing of the names of all the persons in the household, the fact that the additional persons had not been fully enumerated was apparent, and an enumerator visited the household during followup to obtain the information for the additional persons.

Questionnaires for individuals ("individual census reports"), containing only population inquiries, were used for persons in group quarters. Spanish-language versions of the short- and long-form questionnaires (as well as questionnaires for individuals) were available upon request. In addition, translations of the short- and long-form questionnaires were prepared in 32 different languages. Enumerators presented one in the appropriate language to respondents who could not understand English. Separate questionnaires were developed for Puerto Rico and each of the outlying areas (with common subject content for the Pacific jurisdictions).¹² A supplementary questionnaire was used in a sample of households with one or more American Indians located on reservations and in households in rural areas of Oklahoma that were formerly Indian reservations to get more detailed information about special living conditions of Native Americans.

Geographic Structure

Geographic areas—The advantage of a census, as opposed to a survey covering only a limited sample of the population, is that the census provides data for many small geographic areas in addition to the larger ones. Data based on the 100-percent questions are published for all census areas down to the smallest blocks, while data for the sample questions are published generally at the census-tract level and above. The 50-percent sample for

governmental units with under 2,500 people made it possible to produce substantially more reliable data from the sample questions than would have been possible with the 16.7-percent sample used elsewhere.

The 1980 census provided data for numerous political and statistical geographic areas. The political areas included the States and counties (or the equivalents of these), county subdivisions called minor civil divisions, and incorporated places. A number of areas have been specially delineated over the years for statistical purposes; these include standard metropolitan statistical areas (SMSA's), urbanized areas, census county divisions, census designated places, census tracts, and blocks.

Some of the areas for which census data were reported are:

United States—This area includes the 50 States and the District of Columbia.

Regions and divisions—There are four census regions (West, South, Northeast, and North Central [renamed Midwest in June 1984]) defined for the United States, each composed of two or more geographic divisions. The nine census divisions are groupings of States.

Political units—These units are States, District of Columbia, Puerto Rico, outlying areas, congressional districts, counties or county equivalents, minor civil divisions (MCD's) such as towns and townships, incorporated places, election precincts in some States, American Indian reservations, and Alaska Native villages.

Standard metropolitan statistical areas (SMSA's)¹³—An SMSA comprises one or more counties defined around a central city of 50,000 or more population or an urbanized area of 50,000 or more inhabitants with a total metropolitan population of at least 100,000 (or 75,000 in New England). Contiguous counties are included if they have a high degree of social and economic integration with the area's population nucleus. (New England SMSA's are defined in terms of towns and cities rather than counties.) SMSA's were defined and delineated by the Office of Management and Budget.

Standard consolidated statistical areas (SCSA's)¹³—An SCSA is composed of two or more closely related SMSA's having a combined population of 1 million or more. SCSA's are defined by the Office of Management and Budget.

Urbanized areas—An urbanized area consists of a central city and surrounding densely settled territory with a combined population of 50,000 or more inhabitants.

Urban/rural—The urban population comprises all persons living in urbanized areas and in places of 2,500 or more inhabitants outside these areas. All other population is rural.

Metropolitan/nonmetropolitan—The metropolitan population is that living inside SMSA's; all other population is nonmetropolitan. Both metropolitan and nonmetropolitan areas can contain urban and rural population.

¹²There was no sample in the outlying areas because their small populations were not conducive to sampling methods; each housing unit received a questionnaire similar in length to the long form used in the United States.

¹³The terms standard metropolitan statistical area (SMSA) and standard consolidated statistical area (SCSA) were changed respectively to metropolitan statistical area (MSA) and consolidated metropolitan statistical area (CMSA) in 1982, but SMSA and SCSA were used in all 1980 census data products.

Census county divisions (CCD's)—In 20 States in which MCD's are not adequate for reporting subcounty census statistics, the Bureau, in cooperation with local officials, delineated CCD's for this purpose.

Census designated places (CDP's)—Formerly referred to as "unincorporated places," these are closely settled population centers without legally established limits, delineated with State and local assistance for statistical purposes, and generally having a population of at least 1,000.

Census tracts—These are statistical subdivisions of counties. Each tract, generally ranging between 2,500 and 8,000 inhabitants and averaging about 4,000, is delineated (subject to Census Bureau standards) by local committees within SMSA's and other selected areas.

Blocks—These units, generally bounded by streets or other physical features, are defined and numbered in urbanized areas, incorporated places of 10,000 or more population, and additional areas that contracted with the Census Bureau for the collection of block statistics.

Block numbering areas (BNA's)—These are areas defined for the purpose of grouping and numbering blocks where census tracts have not been established.

Block groups (BG's)—BG's are sets of contiguous blocks beginning with the same first digit within a census tract or BNA and are used in lieu of enumeration districts for tabulation purposes in BNA's.

Enumeration districts (ED's)—ED's are used for census tabulation purposes where census blocks and block groups are not defined. They are used throughout the country as the administrative units to be covered by census enumerators, generally one or more ED's per enumerator.

Mapping—Maps are essential tools used by the Census Bureau both in data collection and data dissemination. For the 1980 census, the Bureau produced more than 32,000 individual map-sheets covering the entire country, Puerto Rico, and the outlying areas. The Bureau started with existing maps from the U.S. Geological Survey, State highway departments, county governments, incorporated places, etc., and adapted these for census use by removing unnecessary information from the maps and adding boundaries for census tabulation areas.

Each enumerator was given a map on which the assigned ED was clearly delineated so that the enumerator would know precisely the territory for which he or she was responsible, and thus avoid the omission of any portion of the ED or the inclusion of part of a neighboring one. The map also helped the enumerator cover the area systematically and, where the ED contained two or more blocks, identify each housing unit with the correct geographic code.

The maps used for field work reflected the geographic situation as of January 1, 1978, for mail census areas and January 1, 1979, in door-to-door areas. During the field enumeration, the maps were updated to reflect current conditions. The official date for census geography was January 1, 1980; any changes effec-

tive after that date, such as annexations, were not reflected in the final census tabulations.

Finalized maps were available for sale to users, beginning in mid-1981, so they could relate the data to the proper geographic area. Selected maps were also included with the printed reports, or, as with the block maps, sold as a separate package from the block statistics microfiche report.

PUBLICITY

The 1980 census promotional campaign was the most creative and effective publicity effort in U.S. census history. Its main focus was to inform the public, whose cooperation is essential to the success of any census, of the importance of census data and of achieving as complete a count as possible. More specifically, it was aimed at encouraging persons living in the United States to fill out their census forms and, in mail census areas, to mail them back to the census district offices.

The promotional campaign was directed by the Census Promotion Office (CPO) which was established in the summer of 1978.¹⁴ It secured the free services of the Advertising Council in directing a major media advertising campaign.¹⁵ The decision to use free advertising rather than to seek funds from Congress for a paid campaign was controversial; some observers doubted the effectiveness of a free effort. However, the Advertising Council's campaign, developed by the firm of Ogilvy & Mather, proved to be a great success. An independent study found that the commercial advertising dollar value received by the Bureau of the Census in the period between January and June 1980 was nearly \$38 million.

The centerpiece of the promotion effort was the slogan "Answer the Census, We're Counting on You." (See ch. 4.) The campaign was conducted in all major media: television, radio, newspaper, transit cards, outdoor billboards, business and trade press, etc.

A committee of leaders in the broadcasting industry representing all major markets in the country was also formed. The members of the committee helped to ensure that the census messages were aired on the radio and television stations in their areas.

A number of celebrities, including some well known among minority communities, donated their time to tape public service announcements (some in Spanish or Chinese) or to undertake other efforts endorsing the census and urging audience cooperation.

The advertising campaign was only part of the Bureau's 1980 promotional effort. Census information kits were mailed to more than 44,000 magazines, and another 22,000 to newspapers and television and radio stations. The latter were tailored specifically for the appropriate State and type of media. Special kits were designed for Black, Hispanic, American Indian, and Asian and Pacific Islander news media. Another kit was given to each member of Congress.

¹⁴Other Bureau units had census promotional responsibilities, including the Public Information Office and the Field Division. Broad planning for promotion of the 1980 census began early in the decade. A number of projects conducted between 1972 and 1978 aided in this, including the pretest and dress rehearsal censuses mentioned previously.

¹⁵The Bureau's publicity budget covered the cost of producing advertising materials and providing such services as photography, filming, and graphic artwork, and a service charge for Advertising Council office and processing operations.

200 million reasons to answer the Census.

People.

The Census is about, by and for you, all of you, all the people of this country. That's how it's been since 1790, when the first Census painted a picture of the country's population to help guide legislation. Legislation that helped people.

It's especially important to answer the Census because it is the data-gathering tool which helps assure each area of fair representation in Congress. Unless you answer the Census, unless you are *counted*, your area may not get the fair government representation it needs and deserves.

Now, almost 200 years later, the Census is helping people more than ever. Census information is used in allocating over \$50 billion in government funds every year. These funds go to developing new job programs, building new schools, parks, hospitals, day care and nutrition centers, and many more important programs.

Nobody can use your census form to get information about you. Nobody. That's not just a promise. That's the law.

So please, when you get your census form in the mail, take the time to fill it out and return it. You'll be helping yourself, your community, your country.

Can we count on you?

We're counting on you.

Answer the Census.



The Director of the Census Bureau sent a letter to the chief executive officers of the Nation's largest corporations requesting their assistance in supporting census promotion. As an example of the response, the American Telephone & Telegraph Company included census messages with 90 million telephone bills sent out in March 1980. The Director also wrote to 300 national organizations soliciting assistance through their memberships; the Boy Scouts, for instance, delivered 30 million census brochures door-to-door in March 1980. As an example of inter-governmental cooperation, March 1980 social security check mailings also contained census promotional messages.

Kits containing reproducible materials were sent to over 100,000 elementary and secondary schools throughout the country. The goals of this program were to have younger children involve their parents and other family members in the census through take-home assignments and to prepare teenagers in households with language and reading difficulties to assist in filling out the census questionnaires.

During the field enumeration, a 40-person network of public-relations specialists, operating out of the regional offices and district offices in major metropolitan areas, handled a wide variety of promotional responsibilities. They obtained time for public service announcements on local radio and television stations, advised the census district managers on how to work with the press, achieved the cooperation of local companies in the promotion effort, and served as liaisons with complete-count committees, etc. At the urging of the Census Bureau, more than 4,000 complete-count committees were organized by local jurisdictions throughout the country in an effort to generate local publicity. Census district office managers and the community services specialists also played a role in disseminating the census message.

THE FIELD ENUMERATION

Overview of Census Methods

Basic census procedures involved the use of the mailout/mailback method for areas of the country containing 95.5 percent of the population and the conventional method (i.e., going from door-to-door) for the remainder of the country. This was essentially the same approach as in 1970, except that the mail census procedure was used more extensively in 1980. (See map on the facing page showing mail census and conventional areas.)

In the mail census, preaddressed census questionnaires (either short or long forms) were delivered by the Postal Service to over 80 million housing units. Instructions in the questionnaire mailing packages asked householders to fill out their forms and mail them back in the enclosed return envelopes to the local temporary census office. In general, census enumerators made personal visits only to housing units for which forms had not been mailed back or from which additional information was required. Enumerators were also used to obtain information about persons living in group quarters.

In the conventional method, unaddressed short-form questionnaires were delivered to housing units by the Postal Service 4 days prior to Census Day. But, unlike in mail areas, householders were instructed to fill out their forms and hold them until an enumerator visited. The enumerators collected completed short forms or helped householders fill them at the time

of the visit, or completed a long form at designated housing units. Enumerators also visited group quarters.

Field Organization

The field enumeration or data collection was the direct responsibility of the Bureau's Field Division at headquarters. Regional census centers (RCC's) were set up in each of the Bureau's 12 permanent regional office cities for the duration of the census. (See app. 1F.) In addition, there were 409 temporary district offices in the 50 States and the District of Columbia, 8 in Puerto Rico, and 1 for each of the outlying areas.

Each RCC had responsibility for directing operations for approximately 35 temporary census district offices. RCC personnel trained key district office supervisors, monitored costs and progress of operations in the district offices, processed district office payrolls, and had overall responsibility for assuring the timely completion of field work. The person responsible for directing the operation in the RCC was the regional census manager (officially called the assistant regional director—census), who was assisted by technical specialists for operations, administration, geographic matters, recruitment, publicity, and community services. The regional census manager reported to the regional director of the permanent regional office, who in turn reported to the Field Division at headquarters.

There were four types of district offices. In mail census areas, district offices were either "centralized" or "decentralized." The 87 centralized offices were in inner-city areas, while the 286 decentralized offices were located primarily in suburban and rural areas. There were 24 offices in areas of the country where the conventional method of enumeration was used. In addition, there were 12 "two-procedure" offices where conventional and decentralized procedures were both employed.

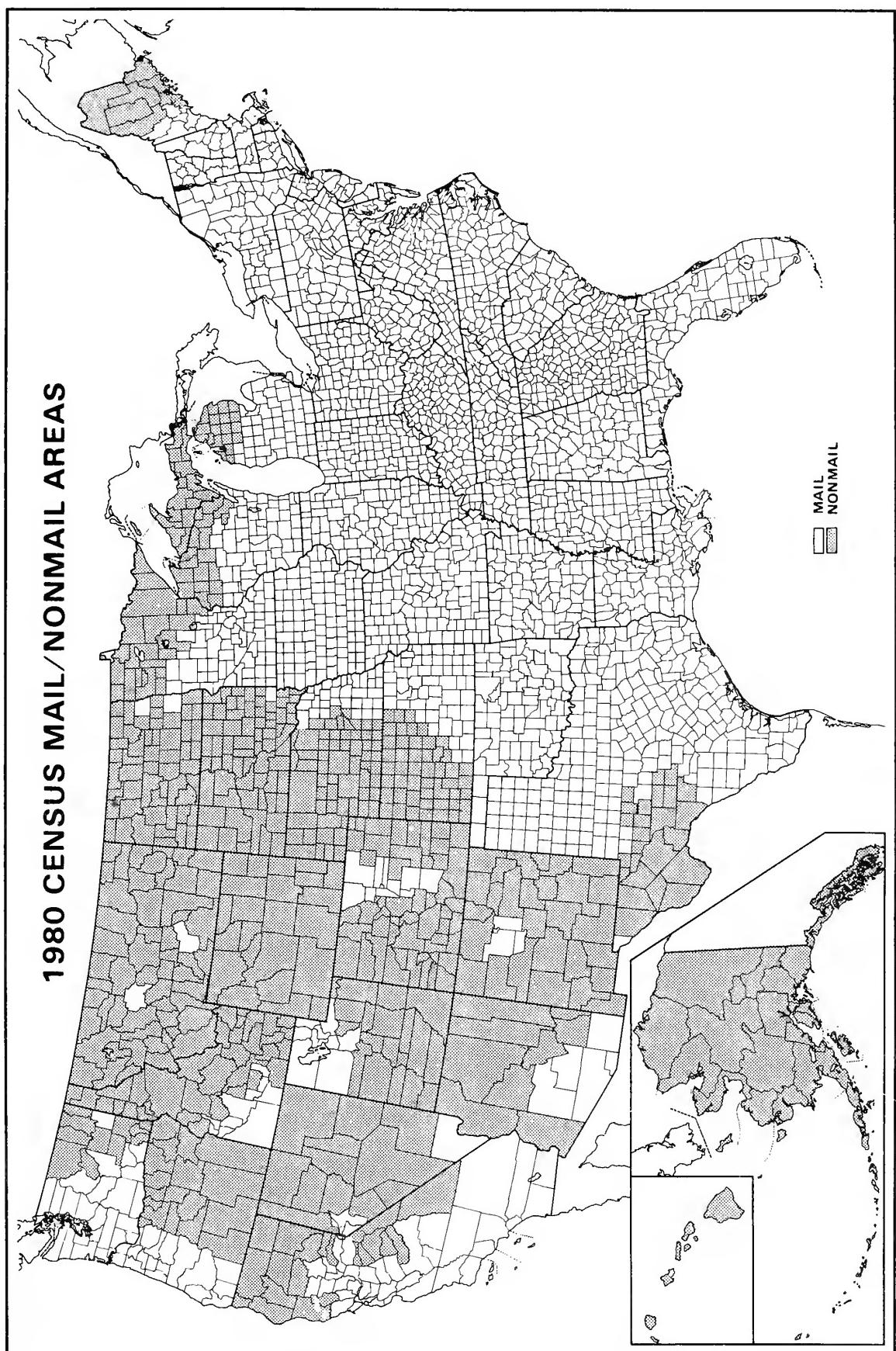
District office operations were under the direction of a district office manager, who was assisted by top-level supervisors for field, office, special place, administrative, and recruitment operations. The census enumerators worked under the supervision of crew leaders and higher-level field supervisors, and there was a clerical force in each office.

Recruitment, Training, and Payrolling

District managers for the centralized offices were recruited from among Census Bureau headquarters personnel, and most of the RCC staff were persons who had previous experience in the Bureau's census or survey work. All other personnel were temporary employees hired only for the census. Except for the centralized office managers, the manager and key supervisors in the district offices were hired by the RCC's, while other district office staff were hired at the district office level.

The Bureau's recruitment objective was to have a staff in each district office that was representative of the population of the area it covered. This meant that goals were set for employing a certain number of women and minorities—Blacks, Hispanics, Asian and Pacific Islanders, Native Americans—or persons with proficiency in certain languages, such as Spanish, Chinese, Portuguese, etc. It was believed that a representative staff would achieve the best count possible in each area. Along these same lines, efforts were made to employ enumerators who lived in the ED's they covered.

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To meet the hiring goals mentioned previously, various sources were contacted, including elected officials, public employment services, unemployment offices, and community-based minority organizations. In addition, free recruitment advertising was obtained on television and radio and in newspapers; paid advertising was used only when hiring goals could not be met through other means.

Regardless of the recruitment source, all job candidates had to pass a written test and meet a minimum of other qualifications (citizenship was not required) before they could be hired. There were two versions of the test, one for higher-level supervisors and one for lower-level supervisors (such as crew leaders) and nonsupervisory employees. The tests were designed to determine whether candidates could perform census-related tasks. A Spanish-language version of the lower-level test was also available upon request in some areas.

In all, about 1.2 million persons were tested for census jobs, and about 80 percent passed. About 460,000 persons were employed at one time or another in the census district offices, with 270,000 working at the peak of activities in April and May 1980. These positions included enumerators, crew leaders, office clerks, and supervisory personnel. The RCC's had about 1,800 people at the peak of activities.

The verbatim training method was used in 1980 as in previous censuses; however, greater use was made of audiovisual materials and learn-by-doing exercises. Training guides, which were to be read aloud word-for-word by the trainer, were prepared in the Bureau's Field Division for each census position. Each trainee received various aids and workbooks as supplements to the verbatim instruction. For the most part, each employee was trained by the person who would be his/her supervisor; thus, enumerators were trained by their crew leaders, etc. After training, employees were to consult procedural manuals for guidance on how to complete a task.

Temporary employees were paid weekly in centralized offices and biweekly in decentralized and conventional offices. The pay rates varied by type of office, with the highest rates in centralized offices and the lowest, in conventional. Enumerators were generally paid on a piece-rate basis, that is, a certain amount for completing a short-form questionnaire, a long form, etc. The piece rates were designed so that enumerators could earn a targeted hourly wage of \$4.00 to \$4.45. Under certain circumstances, enumerators were paid an hourly wage and received mileage or time-enroute payments. Crew leaders were paid from \$4.50 to \$5.10 per hour; for office clerks, from \$3.55 to \$3.75.

Enumeration in Mail Census Areas

Logistics and early operations—Offices in mail census areas officially opened January 2, 1980, though most were open for receipt of the first truckload of supplies in mid- or late December 1979. Bureau staff leased nearly 4 million square feet of space. Rent-free space for training crews of enumerators was obtained in schools, churches, post offices, and other community meeting areas. Much of the activity in the district offices prior to Census Day was centered around laying out office space and setting up furniture, organizing and inventorying supplies, and hiring staff.

A massive logistics effort—involved the development of specifications, and the purchasing or leasing and distribution of needed items—was required to stock each office with the

materials, equipment, and supplies needed to conduct the census. Each office was sent 1½ to 2 tons of supplies. Preparation of the supplies at the Bureau's processing centers required a great deal of advance work and intricate planning, and the staging and loading onto trucks was an around-the-clock job in the weeks just before the offices opened.

Various items were required in each office, including the census questionnaires, address registers, kits containing training materials, procedural manuals, enumerator supplies, and a number of special operational forms.¹⁶ In addition, each office received kits containing typical office supplies, and equipment such as filmstrip projectors and cassette players for use in training. All offices were furnished with folding chairs, cardboard tables, desks, filing bins, and a small amount of more durable furniture for the supervisory staff. Typewriters were rented locally. Telephones were installed as needed, including extra lines to handle calls from respondents needing help in completing census questionnaires and, in inner-city offices, lines for calling respondents who returned incomplete questionnaires. Facsimile machines for transmitting population counts and other information to the regional offices were installed in most district offices.

One of the most important early jobs in the mail census district offices was conducting operations designed to improve census mailing lists; this was to ensure that the mail-out of questionnaires would be as complete as possible. Each district office received address registers listing addresses for each ED in the office area; these had been compiled in late 1979 and early 1980. In city-delivery areas, mailing lists used to compile the registers had been purchased from private companies and had undergone an advance check by the U.S. Postal Service in June 1979. The lists were checked twice more by the Postal Service after the district office opened, in early March 1980 and at the time of delivery of the questionnaires (March 28). In addition, census enumerators had conducted a further check beginning in mid-February in an operation called "precavass." Necessary additions, deletions, or corrections of addresses generated by the postal checks and the "precavass" were made by clerks in the census offices. For areas where mailing lists could not be purchased from private companies, they were compiled by census enumerators in the spring and summer of 1979 in a "prelist" operation. Addresses in these areas also underwent the two postal checks in March 1980.

Questionnaire mailout and mail returns—On March 28, 1980, postal carriers delivered an addressed census questionnaire mailing package to every housing unit on the Bureau's mailing lists. In addition to either a short- or long-form questionnaire, the mailing package included an instruction booklet and a return envelope.¹⁷ As previously mentioned, householders were instructed to fill out the form and mail it back to the local census

¹⁶Over 2,500 special forms were designed and printed for the 1980 census. More than 2 million specially designed kits were assembled at the Bureau's processing offices and shipped to the district offices.

¹⁷Private contractors printed more than 170 million short- and long-form questionnaires for use in the census mailout, enumerators' kits, or training. Other contractors stuffed about half of these questionnaires into specially designed envelopes along with the instruction booklet and return envelope. Some 75 million packages were machine-labeled for each address known to the Bureau prior to the census; additional questionnaires were addressed by hand in the district offices following various mailing-list improvement operations.

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office on April 1, Census Day. Return postage was prepaid (the Census Bureau reimbursed the Postal Service for the costs of the mailout and returns). The address of the district office was printed on a label attached to the questionnaire; this label also contained certain important geographic codes and other information.

To help respondents fill out their forms, the Bureau set up telephone assistance lines in each district office; in most cases, these were toll-free numbers. The telephone assistance number for each respective district office was printed on the questionnaire label, and was published in local newspapers and announced over television and radio. It was estimated that more than 1.8 million calls were answered. Walk-in assistance centers were set up in some large cities, in space donated by local community groups. In addition, the community services specialists and other Bureau personnel conducted community workshops on filling census questionnaires in the weeks before Census Day.

The promotion effort prior to Census Day in mail census areas focused on encouraging people to complete and mail back their census questionnaires. Forms were returned to the district offices for about 83.3 percent of all occupied housing units. This figure was derived using the final census count of occupied housing units.

As the questionnaires were returned to a district office, they were sorted by ED and filed in a highly secure part of the office. Securing the questionnaires in this manner was one of the steps taken to ensure the confidentiality of census information. Only those census employees who needed to work with a questionnaire were given access. Persons who were not census employees were escorted at all times when inside the office. Such persons were not allowed (even with an escort) in any part of the office where questionnaires were kept or processed. After being sorted by ED, the questionnaires were ready to be "matched" to the address register for that ED, an operation called "check-in."

Special places—The special-places operation enumerated persons living in college dormitories, prisons, hospital chronic wards, some nursing homes, and other group-quarters arrangements. At hotels, motels, missions, and street corners, etc., the special-places operation also enumerated those travelers who had no one at their usual home to count them, other transients, and persons with no usual place of residence.

The enumeration of special places began in most cases on Census Day, but in some instances it began earlier; for instance, if a college recessed around Census Day, the enumeration started a week or two before. Special places (except for regular housing units within them) were not enumerated by the mail census method, but through various means—direct enumeration, questionnaire dropoff, etc.—depending on the nature of the place. As part of the advance work, the district offices mailed out posters to each place explaining that the publicity asking persons to mail back their questionnaires did not apply to those living in group quarters.

Followup, phase 1—Two weeks were allowed for the receipt and check-in of mail-return questionnaires. Then, a copy of the address register showing which units had and had not been accounted for was given to enumerators, who were to follow up

on those that had not returned a questionnaire. The first phase of followup began on April 15 and lasted 6-8 weeks in most district offices, though it took longer to complete in hard-to ENUMERATE areas.

The followup workload consisted of nonresponse units—occupied housing units for which no questionnaire was received and vacant units.¹⁸ The enumerators went to each nonresponse housing unit and either picked up a questionnaire if the householder had already filled it out, or completed a questionnaire when necessary. They also answered the housing questions for vacant units. The enumerator's instructions encouraged maximum self-response or self-enumeration by the respondent. For instance, during an interview, the enumerator was instructed not to answer any item by observation, but to wait for a reply to each question from the respondent.

The enumerators were expected to work during the hours when most people would be at home, but not before 9 a.m. or after 9 p.m. If the enumerator was unable to find anyone at home after four visits, he/she attempted to complete the questionnaire by observation or by talking to neighbors, landlords, building superintendents, etc.—a procedure termed "last resort." Every effort was made to obtain at least "last resort" information. For population questions, "last resort" required that the name of each person and three of the following four characteristics per person be collected: relationship to the person in column 1 on the questionnaire, sex, race, and marital status. "Last resort" also required answers to a number of housing questions for both occupied and vacant units.

Crew leaders were responsible for meeting frequently with their enumerators to pick up completed questionnaires, answer questions, and complete administrative forms. They used checklists to review the work of their enumerators. An "assignment control" section in the district office also reviewed the enumerator-returned questionnaires for completeness.

Questionnaire edit—The questionnaires returned by mail (and enumerator-returned questionnaires in centralized offices only) were edited by district office clerks to make certain that they had been completed in an acceptable manner. To facilitate FOSDIC processing, the clerks also looked at the questionnaires for stray marks or written answers where there should have been filled circles, and transcribed the information from damaged questionnaires onto new ones. The edit was conducted by placing a cardboard template over the questionnaire; the template had printed instructions for the clerks to follow and a pattern of openings which allowed answers on the questionnaire to show through. Specific rules, differing by centralized and decentralized offices, were applied to determine whether a questionnaire was within tolerance or failed the edit. A quality control operation was conducted to ensure the accuracy of the edit.¹⁹

For questionnaires that failed edit, an attempt was made first to resolve the problem by telephoning the household in question. Respondents had been instructed to write their telephone numbers on the backs of the questionnaires. The telephone followup was conducted by clerks in the district offices in cen-

¹⁸It was not known whether a nonresponse unit was occupied or vacant until a determination was made by the enumerator.

¹⁹Quality control checks were a part of most major field operations; they are described in a separate chapter on the field work.

tralized areas. Most of the failed-edit questions were resolved by telephone, but those that were not were sent for a personal visit by an enumerator. In decentralized office areas, enumerators were instructed to attempt to resolve failed-edit cases by telephones first, and, if unable to do so, to make a personal visit to the housing unit.

Followup, phase 2—At the completion of the first phase of field followup and the office questionnaire edit, the second phase of field followup was begun. The starting dates varied by district office, depending on when the previous operations were completed. Various kinds of "cleanup" work were conducted as part of the second followup. The cases from the first followup, where there was still no questionnaire for a household, were to be completed. The failed-edit questionnaires requiring a personal visit were also part of the workload in this operation.

The second followup also included one of the major coverage-improvement checks in the census—called the "vacancy/delete check."²⁰ All housing units classified as "vacant" by the enumerator in the first followup and most addresses deleted from the address registers in earlier operations were checked by a different enumerator in the second followup to determine whether the units were in fact "vacant" or were correctly deleted. As a result of this check, some units that had been classified as "vacant" were found to have been occupied, and some addresses deleted from the registers were found to be existing vacant or occupied units. Questionnaires were completed for the persons and/or housing units found in both cases.

Enumeration in Conventional Areas

Early operations—Conventional offices were officially opened on January 28, 1980. As in mail census areas, much of the activity prior to Census Day centered around setting up the office, organizing supplies, and hiring staff. There were no pre-Census Day address listing operations as in the mail census areas. Advance contacts were made with the largest special places, and mailing pieces explaining the upcoming enumeration were sent to those not contacted personally.

A coverage check was conducted as a quality control on the work of the enumerators. Crew leaders made listings, in advance of the census, of 24 addresses in each ED. After the enumeration was completed, the advance listings were matched to the listing of housing units made by the enumerator to determine whether the enumerator missed any housing units. If no address was missed, the work was considered to be of good quality; if only one address was missed, the work was acceptable but the address was added to the address register. If more than one address was missed, the ED was recanvassed and missed units were added to the address registers. Questionnaires were filled for households and housing units not previously enumerated.

Regular enumeration—Postal carriers delivered unaddressed short-form questionnaires to each known housing unit on March 28. Householders were instructed to fill out the form and hold it until an enumerator came to pick it up. Beginning on March 31, the enumerators canvassed their assigned ED's, listed

the address of each housing unit, and collected questionnaires or filled them, as necessary. At a sample of households, the enumerator also asked the long-form questions.

American Indian enumeration—A supplementary American Indian questionnaire was filled for every housing unit on Indian reservations that was designated as a short-form housing unit and had at least one American Indian, Eskimo, or Aleut occupant. The supplementary questionnaire was also used in mail census districts where there were Indian reservations or in parts of Oklahoma that were formerly Indian reservations (except those in urbanized areas).

Post-enumeration post office check—In addition to the coverage check mentioned above, the Postal Service was also used to help improve census coverage in conventional areas. The enumerators filled an address card for each housing unit they listed. The cards were delivered to the post offices where carriers reviewed them and noted addresses to which mail was delivered but for which there were no cards. These addresses were added to the address registers, if they were not already listed, and the units were later enumerated.

Editing and the sample tolerance check—Since all questionnaires were returned to or filled by an enumerator, whose work was checked by a crew leader, it was not necessary to have a full edit operation as in mail census offices. As a quality-control measure, a sample of the questionnaires for each ED was reviewed for completeness by office clerks. If the sample failed the review, the office clerks edited all the questionnaires for the ED. The purpose of the quality control was to identify questionnaires with missing information so they could be included in the followup operation.

As mentioned previously, enumerators filled a long-form questionnaire at a sample of the households in their ED. The sampling pattern was preprinted in the enumerator's address register. Experience from previous censuses and tests indicated that enumerators did not always adhere to this pattern. Since many of the estimates from census data are based on the additional information obtained from long-form questionnaires, it is important that the sample of households enumerated on long forms be accurate and representative of the total population. After the enumeration, office clerks conducted a sample tolerance check to see if the sampling pattern had been properly employed. This was done by comparing the actual population in an ED to an estimate based on the number of people on the long-form questionnaires for the ED. If the difference was significant, the ED was "resampled" by transcribing some short forms to long forms or vice versa; long-form information was collected where necessary.

Followup—The followup in conventional offices was similar to the second phase of followup in mail offices. Enumerators telephoned or visited housing units to obtain the required information on questionnaires that failed edit or were "refusal" cases during the regular enumeration. ED's that failed the sample tolerance check were resampled as noted above, and ED's that failed the coverage check were recanvassed. New addresses from the postenumeration post office check were visited and

²⁰Also referred to as the "misclassified occupied check" or "unit status review."

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enumerated, and the "vacancy/delete check" was conducted in the same way as in mail census areas.

Local Review

The Local Review Program was one of several efforts specially designed by the Census Bureau to improve the completeness and accuracy of the 1980 census, and was a part of census operations in both mail and conventional areas. Its purpose was to allow local government officials in some 39,000 jurisdictions the opportunity to review the counts before they became final, and while census district offices were open and able to check any reported discrepancies.²¹ In addition, reviews were conducted at about the same time by Bureau staff in the district offices and at headquarters. Local review pinpointed such major problems as clusters of missed housing units, geographic misallocations, and/or incorrect geographic boundaries.

Field counts tallied in the district offices after the completion of the first followup or regular enumeration were sent to local officials who had 10 working days to review the figures. Materials explaining the Local Review Program had been sent to local officials in the fall of 1979 and census maps had been sent to the localities several weeks prior to the mailout of the field counts so that they could organize their information. The counts, which were provided for ED's and higher level geography, included total population, the number of persons living in group quarters, and housing unit counts, including the number and percentage of vacant units. At this stage of the census, the housing unit counts were more complete than the population counts, and the officials were asked to concentrate their review on the former.

If the local officials provided sufficient evidence of discrepancies in the census housing-unit counts, the district office took several steps to check them, including a review of address registers in the office and/or a field canvass of the area in question. After receipt of the local responses to the numbers, the district offices had about 4 weeks to take action before they closed.

Closing the District Offices

After the completion of all followup work, a final manual tally of population and housing counts was made in each district office. The totals, referred to as "preliminary" counts, were reviewed by headquarters staff in Washington and, if acceptable, the district office was authorized to close.

Most district offices closed 4-6 weeks behind the scheduled dates, which ranged from July 11 for conventional offices to August 8 for centralized. The first district office closed in late July 1980, and about one-fourth of the offices in August. By the end of September, over 90 percent of the offices had closed. The last offices to close were in large urban areas, chiefly New York City. The final one was in the Bedford-Stuyvesant area of Brooklyn, where an October fire destroyed most of the completed questionnaires just before the office was to close. A reenumeration of the area was completed in December 1980.²²

²¹After the district offices closed, count complaints were handled by a unit at Bureau headquarters.

²²Fire struck the Framingham, MA, office near the end of the first phase of followup, destroying many of the questionnaires. A partial reenumeration was required, but the office was still among the earliest to close.

In part because the number of persons and housing units significantly exceeded precensus estimates, work related to preparing for and completing the field enumeration exceeded the budgeted amount, forcing budgetary cuts or slowdowns in other phases of the census (processing and publications).

DATA PROCESSING

As each district office closed, its questionnaires and address registers were boxed and shipped to one of three clerical processing centers—in Jeffersonville, IN, New Orleans, LA, or Laguna Niguel, CA. Their mission was to transfer the data on more than 90 million questionnaires onto computer tapes so that they could be tabulated and cross-classified.²³ This work required a great deal of space for storage, temporary clerical staff, and sophisticated electronic equipment, and could not be accommodated at one site. Indeed, the problems of controlling the flow and whereabouts of questionnaires for 70 million housing units in one location in 1970 (at Jeffersonville) led to the decision to distribute the clerical processing among three sites in 1980.

A Decennial Processing Staff was created to organize and control the clerical and precomputer work; the actual computer processing was done at headquarters. A processing center manager was responsible for the overall direction of the operations in each of the three sites, and was aided by assistant managers for administration and for operations. Top supervisors were, for the most part, selected from among the Bureau's career staff, and clerical employees were chosen through the civil service system.

Videotaped modules prepared by headquarters staff were the primary training tools rather than the verbatim guides followed in the field district offices, although guides were used in some instances in conjunction with audiovisual presentations.

Control of Materials

Each of the three processing centers received millions of questionnaires, thousands of address registers, and vast quantities of other records. To maintain control over these items, an automated inventory and control system, using bar-code scanning as its major input device, was created. A manual control operation was used as a backup in case of failures in the automated system. (A complicated manual control system had been used in 1970.)

As the questionnaires, boxed by ED, arrived at the processing centers, they were checked in and given bar-code labels similar to those seen on items in grocery stores. Each ED box had a unique bar code. During processing, the labels were electronically scanned as the boxes were checked in and out of each work station; thus, it was possible to tell where the materials for a given ED were at any time.

Another control feature was the questionnaire and address register "library." Materials were stored there when not at various work stations, and were always checked back into the library from one major operation before being routed to another.

²³There was at least one questionnaire for each housing unit and additional "continuation" questionnaires for households with more than seven persons. The information for persons living in group quarters was transcribed onto regular FOSDIC-readable questionnaires from the individual census reports.

High-Speed Processing Equipment

The census questionnaires were specially designed and formatted in such a way that, once photographed, any coded marks could be detected by a FOSDIC machine. Answers on the questionnaires took the form of filled circles and written responses. The written responses on sample forms were translated into filled circles by coding clerks. During processing, the questionnaires were photographed (and reduced in size) on 16mm microfilm by high-speed camera units; there were an average of 20 cameras at each site. The film then was developed and subjected to various development and density checks.

The negative microfilm, on which the blackened circles on the questionnaires appeared as clear dots, was scanned by FOSDIC. A tiny beam of light examined each frame of microfilm; where it found a clear dot (literally, a tiny "window" on the black film), the light beam initiated the production of a series of magnetic dots in code on computer tape. The meaning of the dots, in terms of data, was interpreted by their position on the microfilm. The names of individuals were not coded, and did not appear on computer tapes during census data processing. The system was much quicker, cheaper, and more accurate than keying the questionnaire data. One 1980 model FOSDIC machine could transmit the information from 275,000 short-form questionnaires in a 24-hour period. In 1970, the microfilm was flown to Suitland for FOSDIC processing, but in 1980 the FOSDIC machines were on site at the processing centers (four in each). FOSDIC transmitted data by secure electronic means to the main computer unit in Suitland—the UNIVAC 1140—where it was stored on detailed basic record tapes. The output from these tapes, after further processing, was used to produce all 1980 census products.

100-Percent Processing

Processing of the census questionnaires and the resultant data occurred in two separate phases. The first involved the 100-percent questions, found on the short forms and the initial pages of the long forms. The second phase involved the long-form questionnaires and began when most of the work on the 100-percent data was complete.

The 100-percent data were given priority because the Census Bureau was required by law to provide the President, by January 1, 1981, with the final official State population counts.

In addition to meeting this legal mandate, the 100-percent data had to be processed first (1) to provide the analytical tools for evaluating the accuracy of the data and (2) for use as the weighting controls for inflating the sample responses to reflect the total population. Also, the 100-percent processing could be done quicker because it did not involve the time-consuming hand coding required of certain responses on the sample forms.

Materials from the first district offices to close arrived at the processing centers during the first week of August 1980, were checked in, and were prepared for filming. The first data were transmitted via FOSDIC to the computer August 7. The flow of questionnaires from the district offices was slow at first, then built up through early October. Late field office closings threatened efforts to meet the January 1 completion date for transmitting final State population counts to the President. Materials for the Bedford-Stuyvesant (New York) office arrived at Jeffersonville just days before the deadline, but all were pro-

ssed, and 100-percent clerical and electronic operations were completed on time.

Sample Processing

After the completion of 100-percent clerical processing, the long-form (sample) questionnaires were readied for handcoding. Some of the census questions (e.g., ancestry, language, industry and occupation, place of work, and income) required a written answer from the respondents, and coding was essential to convert these written answers into a machine-readable form. Most of the questions requiring coding (25 population and 7 housing items) were on the sample pages of the long form; two questions on the 100-percent pages of the long form—race and relationship—also had to be coded when the respondents wrote in an answer rather than filling one of the answer circles.²⁴

The coding operations were conducted by three separate sections of clerks: One section worked solely on the place-of-work, travel-time-to-work, and migration questions; a second on the industry and occupation questions; and the third on all other "general" items. Because the production atmosphere of a large clerical operation such as coding can result in errors, a quality-control operation was instituted to check the clerks' work. Once the sample questionnaires for a group of ED's were through the complete coding operation, they were filmed and processed via FOSDIC in the same way as the short-form questionnaires.

Due to budget constraints, the decision was made to slow down the sample coding operations beginning in early March 1981 and stretch the work out into the next fiscal year (e.g., beginning October 1981) by reducing the staff. At the same time, it was also decided that the questions on place of work, travel time to work, and migration would be coded on only half of the sample questionnaires, thus reducing the sampling rate for these three items. When the budget situation improved in June 1981 with the appropriation of supplemental funds, the Bureau stepped up its coding operation by again increasing staff; however, the sample reduction for the three items mentioned above was retained. Coding, which had begun at all three sites during January 1981, was completed by the end of October. Filming and FOSDIC transmission was accomplished between July and December. The Laguna Niguel and New Orleans centers and decennial census operations at Jeffersonville closed in early 1982.

Diary Review, Computer Edits, and Sample Weighting

After the 100-percent data were put on computer tape, and again after the sample data were likewise entered, the counts for each ED had to pass a set of acceptance tests to ascertain that data scanned by FOSDIC had not been lost or incorrectly recorded on tape, and that potential errors or unusual entries did not exceed established tolerances for population, housing units, and various population and housing characteristics. Essentially, this involved comparing the initial computer counts to the 1980 field counts. The data that failed were summarized and printed out for each ED in a format called a "diary." To clear up problems,

²⁴Where the written entry could be assigned to one of the circles already on the questionnaire (e.g., assigning a written "Caucasian" to "White"), this was done in district offices. Numerical coding of these write-in entries was done only for sample questionnaires in the processing offices.

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clerks in the processing centers compared the data on the ED diary to the boxes of questionnaires, the address registers, and/or the microfilm to make sure all the forms were in good shape (not crumpled, with sufficiently dark markings, etc.), properly identified, and that none were missed during the filming process. For instance, the clerks might count the number of questionnaires in an ED box and then determine whether all had been filmed. When necessary, rejected ED's were remicrofilmed and sent through FOSDIC once again.

A series of computer edits was employed to fill in missing data on the questionnaires or to account for inconsistent data. Despite the fact that every effort was made to completely fill the questionnaires in the field, there were still questionnaires at the completion of the field work for which some items were not completed or which corresponded to "unclassified" housing units—addresses for which the occupancy status could not be determined in the field. Responses were edited to eliminate inconsistent information based on data from a given record. For example, if the reference person was a married male and the marital status of the female recorded as his wife was "divorced," then the latter's marital status was changed to "married."

In addition, a procedure called "allocation" was used when missing or inconsistent information could not be supplied or corrected on the basis of other entries on the same record. When this happened, the computer selected a reasonably matching housing unit and allocated its characteristics for the missing or inconsistent information. A similar procedure was used for missing population characteristics, by referring back to the closest previous record for a household or person with characteristics resembling the one for which data were needed.

In addition to allocation, "substitution" was sometimes used. This occurred when a person or housing unit was known to be present, but no characteristics were recorded. In this case, data from a previously processed housing unit were selected as a substitute and a full set of characteristics for the housing unit and for each person in the unit was duplicated.

The computer editing procedures were designed to make the census statistics a more useful description of the Nation's population and housing than if "not reported" categories were added to each tabulation. Certain printed reports and most summary tape files included tables showing the amount of allocation and substitution for certain items.

Following computer editing, the sample data went through a procedure that assigned a weight to each sample person and housing unit. In areas sampled at the rate of 1 in 2, the sample weights were close to two. In areas sampled at the rate of 1 in 6, the weights averaged about six. Thus, to obtain tabulations for any characteristic for a particular geographic area (e.g., number of persons in Elm County with incomes of \$20,000 or more), the weights for the sample persons and/or housing units with the characteristics of interest were simply summed. The weights were assigned in such a fashion that for most large geographic areas the 100-percent census counts and the sample tabulations for total population and total housing units were very close.²⁶

In addition to the ED-level data check done in the diary review, the data for larger areas—States, SMSA's, counties, places,

²⁶The weights were assigned to the sample persons and housing units as the result of a complex iterative ratio estimation procedure.

MCD's, etc.—were checked through elaborate computer programs called "analyzers." The purpose of the analyzers was to assure that the statistics for larger areas conformed to their expected levels based on the previous census or intercensal surveys. The analyzers also were used to check the totals for population and housing-unit counts, and monitor the allocation rates of various population and housing characteristics.

Confidentiality of Census Records

Once the above processes were completed, edited data about individuals and housing units, together with associated geographic information, were stored on basic record tapes (BRT's). All 100-percent and sample tabulations were made from these tapes. Although the BRT's do not contain names and addresses, they do have detailed geographic codes and household data that could result in the disclosure of data for individuals; therefore, these tapes are confidential and may be used only by Bureau employees in preparing statistical products.

The original questionnaires were destroyed and the pulp recycled about the time the processing centers closed.²⁶ One microfilm copy of the questionnaires was placed in the custody of the National Archives, and another was retained for use in "Age Search" processing at the Bureau's Pittsburg, KS, facility.

DATA PRODUCTS AND DISSEMINATION

Once the data were entered on the BRT's, the creation of census products could begin. The primary product was a series of five summary tape files (STF's). These computer tapes provided only tabulations or frequency distributions rather than the individual records which were on the basic tapes, and thus could be sold for public use. The STF's were used to produce sets of tabulations that appeared in printed reports or on microfiche. The printed reports served a broader audience than the STF's, but were more costly to produce and contained only a small portion of the tabulations on the STF's.

The Bureau's new policy for correcting the counts contributed to a delay in issuing the 100-percent data products. In 1970, when population and housing count errors—resulting from geographic misallocations or processing operations—were detected, the Bureau used errata sheets in the printed volumes to notify users of corrections. While such sheets were still used to some extent in 1980, an effort was made to insert as many corrections as possible in the basic record tapes.

As mentioned previously, budget constraints forced a slowdown in sample coding and, added to the delays in issuing sample data. To compensate somewhat for this delay, the Bureau issued some early tabulations, one set based on a part of the sample. The reports containing these data are discussed in "Summary Tapes."

The budgetary constraints also required that some economies be made in the original plans. For instance, one report series originally intended to be issued as printed reports was issued only on microfiche, a less expensive process. The Bureau also planned to produce microfiche of all paper reports, but in order to save money, the reports were generally issued either in print or on

²⁶A small percentage of the questionnaires was retained, until no longer needed for processing and evaluation purposes.

microfiche, not both, until the summer of 1984, when microfiche was prepared for virtually all of the 1980 paper reports. Microfiche copy was issued for fewer tape products than originally planned. Finally, plans to combine the individual paperbound reports in some of the population and housing series into hardbound volumes were also dropped.

Release of Early Counts

The first data released in the 1980 census were the preliminary housing unit and population totals provided when the district offices closed. Each locality was sent a mailgram announcing its preliminary population and housing-unit counts based on the completion of the field work. The Bureau issued these figures simultaneously in press releases. The announcement of these field counts for some 39,000 local governments was completed in mid-December 1980.

The first computer-generated counts were released at the end of 100-percent data processing. These were the official State population totals, transmitted by the Director of the Census Bureau to the President on December 31, 1980, along with the number of seats to which each State was entitled in the House of Representatives.

Under the provisions of Public Law 94-171, the Bureau was required to produce certain data for delivery to State apportionment and redistricting officers by April 1, 1981. The figures were released in February and March on computer tape, microfiche, and eye-readable paper prints from the microfiche. These data files contained figures for total population and provisional figures for persons of Spanish origin and for five race groups: White; Black; American Indian, Eskimo, and Aleut; Asian and Pacific Islander; and Other. The data were shown for the lowest geographic areas—blocks, ED's, or election precincts in certain States. Detailed maps showing these geographic areas were also provided to the States.

Summary Tapes

As mentioned previously, the major portion of the results of the 1980 census were provided in a set of five summary tape files (STF's) for data users with access to computer facilities. The STF's, which were released on a State-by-State basis, provided data with much greater subject and geographic detail than was feasible or desirable to publish in printed reports.

The first two STF's related to the population and housing subject items collected on a 100-percent basis. STF's 3, 4, and 5 contained subject items collected on a sample basis, and generally included cross-classifications with 100-percent items.

The first four STF's had varying degrees of small-area data, while the geography in the fifth was limited to States, SMSA's, central cities of SMSA's, and counties and places with 50,000 or more inhabitants. Most of these STF series were divided into two or more files labeled "A," "B," etc., which had different geographic structures. For instance, STF 1A provided data down to block group/ED level, but STF 1B gave data for blocks; STF 2A contained tract statistics, but in STF 2B the lowest geographic levels were places of 1,000 or more and county subdivisions. The "C" files were national in scope, with figures for higher level entities such as places with 10,000 or more inhabitants and counties.

The first summary tapes were released in August 1981 and all had been released by the end of 1984.²⁷

Printed Reports

The Bureau's printed reports appeared in paperback volumes or on microfiche and were released under three subject titles, *1980 Census of Population and Housing*, *1980 Census of Population*, and *1980 Census of Housing*. A number of the population census reports contained some housing data and a number of the housing census reports contained some population data. Issue dates below are for the reports for the States and the District of Columbia. U.S. summary reports and reports for Puerto Rico and the outlying areas were generally issued later.

Appendix 1B relates the printed reports to the STF's from which they were produced.

1980 Census of Population and Housing—Preliminary Population and Housing Unit Counts, PHC80-P, presented preliminary population and housing unit counts compiled from hand tallies in the census district offices. Counts were shown for the following areas or their equivalents: States, counties, county subdivisions, incorporated places, SMSA's, and congressional districts. A U.S. summary and reports for each State, the District of Columbia, and Puerto Rico were issued between November 1980 and February 1981, and reports were issued in June 1981 for Guam, the Virgin Islands, and American Samoa.²⁸

Final Population and Housing Unit Counts, PHC80-V, reports, which superseded the PHC80-P reports, presented provisional computer-generated population counts classified by race and Spanish origin and final housing-unit counts. PHC80-V reports were also called "advance" reports. Counts were shown for the following areas or their equivalents: States, counties, county subdivisions, incorporated places, and congressional districts. These were issued between February and April 1981.²⁸

Block Statistics, PHC80-1, reports were issued on microfiche only. They presented population and housing unit statistics on selected complete-count characteristics. Statistics were shown for individual blocks in urbanized areas, for selected blocks adjacent to urbanized areas, and for blocks in places of 10,000 or more inhabitants, or in areas which contracted with the Census Bureau to provide block statistics. There was a report for each SMSA, and for each State and Puerto Rico, showing blocked areas outside SMSA's, and a U.S. summary which was an index to the set. These were issued between February and November 1982.

Census Tracts, PHC80-2, reports showed statistics for most of the population and housing subjects included in the 1980 census for census tracts in SMSA's and other tracted areas. Some tables included complete-count data and others, sample data. There was one report for each SMSA, as well as one for most States and Puerto Rico covering the tracted areas outside SMSA's. These were issued between July and October 1983.

Summary Characteristics for Governmental Units and Standard Metropolitan Statistical Areas, PHC80-3, showed selected complete-count and sample population and housing data for

²⁷For both summary tapes and printed reports, the data for States with smaller populations were generally issued first.

²⁸In the PHC80-P and PHC80-V series, only press releases were issued for the Trust Territory of the Pacific Islands and the Northern Mariana Islands.

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States, SMSA's, counties, county subdivisions that were functioning general-purpose local governments, and incorporated places. There was one report for each State, the District of Columbia, and Puerto Rico. These were issued between October and December 1982.

Congressional Districts of the 98th Congress, PHC80-4, presented complete-count and sample data for congressional districts of the 98th Congress, those drawn for the 1982 elections as a result of post-1980 census redistricting. One report was issued for each of the 50 States and the District of Columbia. These were issued between March and May 1983.

1980 Census of Population—The PC80-1 series presented final population counts and statistics on population characteristics. There were reports for each of the following areas: the United States, each of the 50 States, the District of Columbia, Puerto Rico, Guam, the Virgin Islands, American Samoa, and one report divided into two parts showing data for the Northern Mariana Islands and for the rest of the Trust Territory of the Pacific Islands. There were four for each area, A, B, C, and D. A and B presented complete-count data and C and D, sample data (except for the outlying areas where all data were collected on a complete-count basis). B, C, and D presented most statistics by race and Spanish origin for areas with at least a specified number of the relevant population groups.

Number of Inhabitants, PC80-1-A, showed final population counts for the following areas or their equivalents: States, counties, county subdivisions, incorporated places and census designated places (towns and townships in selected States), SCSA's, SMSA's, and urbanized areas. Selected tables contained population counts by urban and rural residence and many tables contained statistics from previous censuses. These were issued between October 1981 and May 1982.

General Population Characteristics, PC80-1-B, gave statistics on complete-count characteristics for the following areas or their equivalents: States, counties, county subdivisions, census designated places (towns and townships in selected States) of 1,000 or more inhabitants, SCSA's, SMSA's, urbanized areas, American Indian reservations, and Alaska Native villages. These were issued between April and November 1982.

General Social and Economic Characteristics, PC80-1-C, focused on more detailed complete-count data and on sample population subjects (education, occupation, income, etc.) for places of 2,500 or more inhabitants and higher geographic levels. These were issued between July and November 1983.

Detailed Population Characteristics, PC80-1-D, statistics on population characteristics were presented in considerable detail and cross-classified by age, race, Spanish origin, and other characteristics. Each subject was shown for the State or equivalent area, and some, for rural residence at the State level. Most subjects were presented for SMSA's of 250,000 or more inhabitants, and a few, for central cities of these SMSA's. These reports were issued between September 1983 and December 1984.

Subject Reports, PC80-2, gave detailed data on particular subjects, principally at the national, regional, and divisional levels. A few reports showed data for States, large cities, SMSA's, American Indian reservations, and Alaska Native villages. The first of these reports was issued in June 1984.

1980 Census of Housing—The HC80-1 series presented housing-unit counts and statistics on housing characteristics in one report for each of the areas covered by PC80-1. There were two parts for each area, A and B. A presented complete-count data, and B, sample data. Both presented most statistics by race and Spanish origin for areas with at least a specified number of the relevant population groups.

General Housing Characteristics, HC80-1-A, contained data for the complete-count housing items, tabulated from the State level down to places of 1,000 or more inhabitants. These were issued between July and November 1982.

Detailed Housing Characteristics, HC80-1-B, covered the sample housing items, tabulated from the State level down to places with 2,500 or more inhabitants. These were issued between July and October 1983.

Metropolitan Housing Characteristics, HC80-2, presented most of the 1980 housing subjects in considerable detail and cross-tabulation for States or equivalent areas, SMSA's and their central cities, and other cities of 50,000 or more inhabitants. There was one report for each SMSA, and one report for each State, the District of Columbia, and Puerto Rico. There was also a U.S. summary report showing statistics for the United States and regions. These were issued between November 1983 and February 1984.

Subject Reports, HC80-3, gave detailed data on housing topics at the national, regional, and divisional levels. The first of these reports was issued in October 1984.

Components of Inventory Change, HC80-4, consisted of two reports presenting statistics on the 1980 characteristics of housing units which existed in 1973, as well as on newly constructed units, conversions, mergers, demolitions, and other additions and losses to the housing inventory between 1973 and 1980. Data were presented generally for the United States and regions, and some data were shown by inside and outside SMSA's and central cities. These reports were issued in October 1983 and January 1984, respectively.

Residential Finance, HC80-5, gave statistics on the financing of nonfarm homeowner, rental and vacant properties, including characteristics of the mortgage, property, and owner. Data were presented generally for the United States and regions and some data were shown by inside and outside SMSA's and central cities. This report was issued in January 1984.

Other products—Several series of supplementary reports were issued in printed form as a means of disseminating selected population and housing data for larger geographic areas in advance of the regular reports. The first population supplement issued in May 1981, was *Age, Sex, Race, and Spanish Origin of the Population by Regions, Divisions, and States: 1980*, PC80-S1-1. The first supplementary report from the census of housing was *Selected Housing Characteristics by States and Counties: 1980*, HC80-S1-1, issued in October 1981.

Another of the supplementary reports was *Provisional Estimates of Social, Economic, and Housing Characteristics*, PHC80-S1-1. Issued in April 1982, it contained the first tabulations of sample population and housing data from the census and was produced to compensate for delays in the regular sample data products. The report was based on data from about 8 percent of the long form questionnaires or approximately 1.5 per-

cent of the housing units and persons in the Nation. Data were provided for the Nation, the States, and the District of Columbia, and the 38 SMSA's with 1 million or more inhabitants.

To further compensate for the late release of sample data, the supplementary reports, *Advance Estimates of Social, Economic, and Housing Characteristics*, PHC80-S2, were prepared. There was one report for each State, the District of Columbia, Puerto Rico, and each outlying area, in a format and with detail similar to that in PHC80-S1-1, and giving data for States, counties, and places of 25,000 or more persons. Unlike PHC80-S1-1, this series of reports was based on the full census sample.

A special computer file (Census/EEO Special File) contained sample data useful in equal employment opportunity/affirmative action planning. The file contained all 503 occupation categories recorded in the census tabulated by sex, race, and Spanish origin, for all counties, all SMSA's, and incorporated places of 50,000 or more persons, plus similar tabulations relating to educational attainment by age.

While the Bureau's STF's contained a wide selection of data tabulations, they could not meet the specialized needs of all data users. Thus, the Bureau prepared public-use microdata samples, containing most population and housing characteristics from a sample of actual census records, to allow users to make their own special tabulations for large areas. The primary consideration in designing these files was to provide as much information as possible while protecting individual confidentiality. No names or addresses were on the files since they were not on the basic record tapes either, and each geographic area identified had to have at least 100,000 inhabitants so that individuals could not be identified by the characteristics given. There were three files, one containing 5 percent, and two others, each with 1 percent of all persons and housing units.

The Bureau also had the capacity to do special tabulations on a cost-reimbursable basis. While these were more expensive for users than purchasing public-use microdata files, the Bureau did offer several standardized tabulations more cheaply. One of these was issued under the Neighborhood Statistics Program, in which participating localities defined neighborhoods in terms of census geography.

A computerized Master Area Reference File (MARF) was issued for use with STF's and other tape products. The MARF contained numeric codes and names (where appropriate) of geographic areas, and selected population and housing counts.

Census maps for 1980 were made available to users once they were finalized. These included five types of detailed maps: county, place, place-and-vicinity (where there were built-up areas around the place), Indian reservation, and for the densely settled portions of metropolitan counties. Detailed maps that included areas covered in the block statistics program were published in conjunction with PHC80-1 (block statistics).²⁹ In addition to these, a number of maps were published with the reports.

Dissemination

Computer tape products and most maps were priced and sold by the Census Bureau's Data User Services Division. The major series of printed reports were priced and sold by the Government

²⁹While the Government Printing Office issued the block statistics reports on microfiche, it provided the maps in paper form. The maps were not necessarily issued at the same time as the reports.

Printing Office. Generally, publications were issued free to Commerce Department field and Census Bureau regional offices, to over 1,300 Government and Census depository libraries throughout the country, and to State Data Centers. These last also received summary tape files for their areas. The State Data Center program is a Federal-State cooperative effort that began in 1977 and by the end of 1983 extended to 49 States, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands. State agencies and their affiliates received basic data products and training so they could assist public agencies and private users.

The Bureau also established the National Clearinghouse for Census Data Services—a group of private, academic, and public organizations that offered data retrieval and related services to outside customers. The Census Bureau does not, however, regulate or endorse any of the registrants.

RESEARCH, EVALUATION, AND EXPERIMENTATION

Formal evaluation has been an essential component of each census since 1950. An extensive series of research, evaluation, and experimental programs was conducted as part of the 1980 census. There were two main areas of evaluation—coverage and content, several major experimental programs, and various research projects.

The primary thrust of these activities was investigative and evaluative, rather than corrective. They are described in greater detail in a separate chapter, with emphasis on methodology and results.

Coverage Evaluation

The first objective of the coverage evaluation programs was to develop estimates of the coverage of the population and housing units in the 1980 census. There were two main programs used to estimate the completeness of coverage of the population. The first was demographic analysis, which aimed at providing national estimates of net census error for age, sex, and race groups. It involved combining various types of demographic data, corrected for errors, from sources essentially independent of the census—such as birth, death, and immigration records—and comparing these estimates with census counts. A major limitation was the lack of acceptable estimates of the illegal alien population.

The second program, called the Post-Enumeration Program (PEP), provided estimates of net undercount. First, 150,000 households in the April and August 1980 Current Population Surveys (CPS) were checked to see if the persons in these households had been enumerated in the census.³⁰ Persons in the CPS who were not found in the census were counted as "gross omissions" from the census, i.e., as part of the undercount. This estimate of omissions was inflated because of geographic errors, and deflated because of duplicate enumerations. To compensate for these factors, a sample of 110,000 households from the cen-

³⁰The Census Bureau conducts the CPS each month to collect current labor force information as well as socioeconomic data from the civilian noninstitutional population; the monthly unemployment figures are produced from CPS data. The CPS is jointly funded by the Census Bureau and the Bureau of Labor Statistics.

Chapter 1. Introduction and Overview

sus was reinterviewed to see if residents had been included correctly in the census—that is, enumerated only once and in the proper geographic area. Results from the CPS-census matching operation were combined with the results from the reinterview sample to provide dual-system (census and CPS) estimates of the population. These estimates were compared with census counts in an effort to provide estimates of the net census undercount for the Nation by certain age, sex, race, and Spanish-origin categories, and for regions, States, and large SMSA's, without the demographic detail. The estimates from the PEP are limited by problems in matching cases between the census and the CPS or reinterview.

In addition to the PEP and demographic analysis, which provided estimates only of population coverage, there was a separate study of some of the components of housing coverage.

The second objective of the coverage evaluation program related to the special procedures and operations designed to improve coverage in the 1980 census. Some of these coverage-improvement techniques had been employed in previous censuses; however, a number were used for the first time in 1980, or were expansions of previous procedures. Among those studied were the vacancy/delete check, the matching of census records to drivers' license lists, the postenumeration post office check, and questionnaire assistance centers. The evaluations measured the improvement in coverage resulting from the operations relative to their cost, and determined whether they had been implemented correctly.

Content Evaluation

Content errors are any errors that result in an incorrect classification of a population or housing characteristic. The two main content evaluations for 1980 were a content reinterview study and a utility cost record-check evaluation. In the content reinterview, about 12,000 households enumerated on long-form questionnaires in the census were reinterviewed and the answers from the reinterview were compared with those given during the census. The reinterview focused on items that were new or substantially changed for 1980 (e.g., Spanish origin, ancestry, English-language ability), and included more extensive, probing questions to measure the consistency and accuracy of reporting.

The utility cost record-check study was conducted to evaluate the accuracy of reporting of average monthly gas and electricity costs (question H22; see app. 1E). Experience from the 1970 census and 1980 census tests indicated that respondents tended to report higher-than-actual expenditures. In this study, a sample of half of the utility customers in eight selected areas received (just before Census Day) a statement from their utility companies showing their average payments for the previous 12 months. It was believed that this information could improve reporting of utility costs. The response errors of these individuals were compared to those of the other half of the respondents in these areas who did not receive the information. The program also examined the data improvements which could result from supplying utility cost information to respondents.

Experimentation

A number of experimental programs examined alternative approaches to 1980 census-taking procedures. Generally, each

experiment was implemented in only a fraction of the district offices.³¹ The appropriateness of conducting an experiment along with the normal census work was a major consideration in deciding which programs to test for 1980. Several procedures were tested, some dealing with variations in the enumeration process and others with alternative methods of recruiting, training, and motivating enumerators.

The update/list/leave experiment studied alternatives to the delivery of questionnaires by the Postal Service. The telephone followup-of-nonresponse experiment explored the cost effectiveness of following up nonresponding households by telephone, rather than by personal visit. The alternative questionnaire experiment tested the effect of questionnaire design on mail-return and item-completion rates. The alternative training experiment compared standard enumerator training with an alternative method. The purpose of the job enrichment experiment was to reinforce the individual enumerator's motivation and job knowledge with extra training and experience. The student intern program tested the feasibility of recruiting and employing college students as census takers, particularly in minority areas.

Other Research and Evaluation Studies

A number of other research and evaluation projects addressed various phases of census-taking. Several evaluations of processing operations, such as coding, imputation procedures, and quality controls, were conducted. A research project on the publicity program was also undertaken, as were several research and evaluation studies of the various sources of error in coverage and content. Another evaluation program, the selection-aid validation study, evaluated the predictive validity and fairness of the field employee selection test.

LITIGATION AND ADJUSTMENT ISSUES

The 1980 census may well be remembered as the most litigious ever. One of the major suits against the Census Bureau was filed even before the census began. In 1979, the Federation for American Immigration Reform (FAIR), consisting of more than 100 persons throughout the country, sought to require the Census Bureau to exclude illegal aliens from the total population for State and Federal reapportionment purposes. The Government argued that it was unconstitutional to exclude from the census any persons living in the United States (except residents of embassies, etc.). Furthermore, the 1980 census questionnaire, which was being printed when the FAIR suit was introduced, did not contain a question that asked whether one was an illegal alien. In addition, the Bureau believed that the inclusion of such an item would have seriously hampered its efforts to achieve a complete count, as illegal aliens would have been more reluctant than ever to respond to the census. The FAIR suit was dismissed in February 1980 by a lower Federal court on the grounds that the plaintiffs had no legal standing to bring the suit. In November 1980, the appellate court affirmed the lower court's decision, and in March 1981 the Supreme Court refused to hear the case. In the meantime, apportionment counts consisting of the entire resident population had been delivered to the President.

³¹The alternative questionnaire experiment employed a national sample and was not limited to specific district offices.

By October 1981, about 50 suits had been filed against the Bureau by States, counties, cities, an American Indian tribe, a special-interest group, and private citizens. Most of the cases concerned one or more of three broad issues: (1) allegations of mismanagement or procedural inadequacy in the 1980 census field activities; (2) access by the plaintiffs to census materials, such as address registers, that contained confidential information, and (3) the adjustment of census figures for undercount.³²

Support for adjustment of the census had been voiced by several sources throughout the 1970's and gained momentum with a study by the National Academy of Science's Panel on Decennial Census Plans in 1978, which concluded that adjustment was feasible. Beginning in the late summer of 1979, the Director of the Census Bureau initiated a program designed to help the Bureau reach a decision on whether to adjust. The centerpiece of the program was a conference on census undercount, held in February 1980, and attended by more than 140 academic, governmental, business, and legal professionals. Attendees considered alternative approaches for measuring the undercount and assessed the implications of adjustment. The primary task of the conference and of two Bureau internal workshops held in the fall of 1979 and the fall of 1980 was to examine the critical underlying assumptions that would establish a proper framework for deciding whether, when, and how to adjust the counts. Papers from the conference and the workshops were circulated to a wide audience for comments. Throughout this process, the Director had indicated his intention not to issue a decision on whether to adjust until late 1980, after the field enumeration was completed and when there might be some indication of the quality of the census, and of the need to adjust.

On December 11, 1980, the Director announced that the Bureau would not adjust 1980 census population totals at that time unless directed to do so by the courts. This decision was based chiefly on two factors: (1) the quality of the 1980 census³³, and (2) the absence of any accurate measure of the number and distribution of illegal aliens in the country. It was announced, however, that the Bureau would continue its research and evaluation aimed at developing "statistically defensible" measures of undercount, and that if measures could be developed which would clearly improve the population estimates made between census years, future estimates would be adjusted.

Several weeks prior to the Director's announcement, a U.S. district court, acting on a suit filed by the city of Detroit, had ordered the Bureau to adjust census counts, to submit its plans for doing so, and to delay the issuance of counts until they had been adjusted. On December 29, 1980, a similar order was issued by the district court in a case filed on behalf of the city and State of New York. These orders had the potential of delaying the issuance of census data and preventing the Bureau from meeting

³²In January 1981, many of the lawsuits which had not yet had final judgments rendered by a district court were consolidated for pretrial proceedings.

³³The census counted some 226.5 million persons, compared with the official estimate for Apr. 1, 1980—221.7 million.

the legal deadline for delivery of apportionment totals to the President. However, at the last moment, the Supreme Court issued stays to the lower court orders, allowing the Bureau to deliver counts to the President on December 31, 1980. These court cases did not prevent the flow of 1980 census data products.

In June 1981, an appellate court struck down the district court order in the Detroit case on the grounds that the city lacked the standing to sue. The Supreme Court declined to review the appellate ruling in late February 1982, making that ruling final. In the New York adjustment case, the appellate court had ruled in June 1981 to send the case back to the district court because the original ruling (in New York's favor) had not protected the interest of other States. In early March 1982, the Supreme Court denied New York's request for a review of the appellate decision. In a separate case, the Supreme Court ruled in February 1982 that census address registers are confidential, denying plaintiffs access to them. These and other cases and suits are discussed in more detail in a separate chapter.

COSTS

The 1980 census cost over \$1 billion, nearly five times that of the 1970 census (\$221.6 million). Several factors contributed to the large increase for 1980: Inflation, additional coverage-improvement programs, other improvements in the field enumeration structure that indirectly improved coverage, new data needs, enhancements in the geographic and processing operations, population growth, and an increase in the number of households.

A review of the yearly obligations of decennial census funds, presented below, shows that 61.6 percent of the funds were obligated in fiscal year 1980. Fiscal years 1974-76 began in July of the previous year (i.e., fiscal year 1974 was July 1, 1973, to June 30, 1974, etc.). Fiscal years 1977-84 began in October of the previous year, (i.e., fiscal year 1977 ran from October 1, 1976, to September 30, 1977). The transitional quarter (TQ) is the period July 1 to September 30, 1976, and represents the time period between the old and new fiscal-year systems.

Fiscal year	Decennial obligations (in thousands)
Total	\$1,078,488
1974	642
1975	2,204
1976	5,180
TQ	2,568
1977	17,073
1978	29,090
1979	132,472
1980	664,642
1981	132,318
1982	50,606
1983	33,269
1984	8,424

Appendix 1A. Provisions of Title 13, United States Code, Relating to the 1980 Census

TITLE 13, UNITED STATES CODE—CENSUS

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Chapter 1.—ADMINISTRATION

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SUBCHAPTER I—GENERAL PROVISIONS

§ 1. Definitions

As used in this title, unless the context requires another meaning or unless it is otherwise provided—

- (1) “Bureau” means the Bureau of the Census;
- (2) “Secretary” means the Secretary of Commerce; and
- (3) “respondent” includes a corporation, company, association, firm, partnership, proprietorship, society, joint stock company, individual, or other organization or entity which reported information, or on behalf of which information was reported, in response to a questionnaire, inquiry, or other request of the Bureau. (Aug. 31, 1954, ch. 1158, 68 Stat. 1012, amended Oct. 17, 1976, Pub. L. 94-521, § 1, 90 Stat. 2459.)

§ 2. Bureau of the Census

The Bureau is continued as an agency within, and under the jurisdiction of, the Department of Commerce. (Aug. 31, 1954, ch. 1158, 68 Stat. 1012.)

§ 3. Seal

The Bureau shall have a seal containing such device as has been selected heretofore, or as the Secretary may select hereafter. A description of such seal with an impression thereof shall be filed in the Office of the Secretary of State. The seal shall remain in the custody of the Secretary or such officer or employee of the Bureau as

he designates, and shall be affixed to all documents authenticated by the Bureau. Judicial notice shall be taken of the seal. (Aug. 31, 1954, ch. 1158, 68 Stat. 1012, amended Aug. 28, 1957, Pub. L. 85-207, § 2, 71 Stat. 481; Oct. 17, 1976, Pub. L. 94-521, § 2, 90 Stat. 2459.)

§ 4. Functions of Secretary; regulations; delegation

The Secretary shall perform the functions and duties imposed upon him by this title, may issue such rules and regulations as he deems necessary to carry out such functions and duties, and may delegate the performance of such functions and duties and the authority to issue such rules and regulations to such officers and employees of the Department of Commerce as he may designate. (Aug. 31, 1954, ch. 1158, 68 Stat. 1013, amended Oct. 17, 1976, Pub. L. 94-521, § 3, 90 Stat. 2459.)

§ 5. Questionnaires; number, form, and scope of inquiries

The Secretary shall prepare questionnaires, and shall determine the inquiries, and the number, form, and subdivisions thereof, for the statistics, surveys, and censuses provided for in this title. (Aug. 31, 1954, ch. 1158, 68 Stat. 1013, amended Oct. 17, 1976, Pub. L. 94-521, § 4, 90 Stat. 2459.)

§ 6. Information from other Federal departments and agencies; acquisition of reports from other governmental and private sources

(a) The Secretary, whenever he considers it advisable, may call upon any other department, agency, or establishment of the Federal Government, or of the government of the District of Columbia, for information pertinent to the work provided for in this title.

(b) The Secretary may acquire, by purchase or otherwise, from States, counties, cities, or other units of government, or their instrumentalities, or from private persons and agencies, such copies of records, reports, and other material as may be required for the efficient and economical conduct of the censuses and surveys provided for in this title.

(c) To the maximum extent possible and consistent with the kind, timeliness, quality and scope of the statistics required, the Secretary shall acquire and use information available from any source referred to in subsection (a) or (b) of this section instead of conducting direct inquiries. (Aug. 31, 1954, ch. 1158, 68 Stat. 1013, amended Aug. 28, 1957, Pub. L. 85-207, § 3, 71 Stat. 481; Oct. 17, 1976, Pub. L. 94-521, § 5, 90 Stat. 2460.)

§ 7. Printing; requisitions upon Public Printer; publication of bulletins and reports

The Secretary may make requisition upon the Public Printer for miscellaneous printing necessary to carry out the provisions of this title. He may further have printed by the Public Printer, in such editions as he deems necessary, preliminary and other census bulletins, and final reports of the results of the several investigations authorized by this title, and may publish and distribute such bulletins and reports. (Aug. 31, 1954, ch. 1158, 68 Stat. 1013.)

§ 8. Authenticated transcripts or copies of certain returns; other data; restriction on use; disposition of fees received

(a) The Secretary may, upon written request, furnish to any respondent, or to the heir, successor, or authorized agent of such respondent, authenticated transcripts or copies of reports (or portions thereof) containing information furnished by, or on behalf of, such respondent in connection with the surveys and census provided for in this title, upon payment of the actual or estimated cost of searching the records and furnishing such transcripts or copies.

(b) Subject to the limitations contained in sections 6(c) and 9 of this title, the Secretary may furnish copies of tabulations and other statistical materials which do not disclose the information reported by, or on behalf of, any particular respondent, and may make special

statistical compilations and surveys, for departments, agencies, and establishments of the Federal Government, the government of the District of Columbia, the government of any possession or area (including political subdivisions thereof) referred to in section 191(a) of this title, State or local agencies, or other public and private persons and agencies, upon payment of the actual or estimated cost of such work. In the case of nonprofit agencies or organizations, the Secretary may engage in joint statistical projects, the purpose of which are otherwise authorized by law, but only if the cost of such projects are shared equitably, as determined by the Secretary.

(c) In no case shall information furnished under this section be used to the detriment of any respondent or other person to whom such information relates, except in the prosecution of alleged violations of this title.

(d) All moneys received in payment for work or services enumerated under this section shall be deposited in a separate account which may be used to pay directly the costs of such work or services, to repay appropriations which initially bore all or part of such costs, or to refund excess sums when necessary. (Aug. 31, 1954, ch. 1158, 68 Stat. 1013, amended Aug. 28, 1957, Pub. L. 85-207, § 4, 71 Stat. 481; Oct. 17, 1976, Pub. L. 94-521, § 6, 90 Stat. 2460-61.)

§ 9. Information as confidential; exception

(a) Neither the Secretary, nor any other officer or employee of the Department of Commerce or bureau or agency thereof, may, except as provided in section 8 of this title—

(1) use the information furnished under the provisions of this title for any purpose other than the statistical purposes for which it is supplied; or

(2) make any publication whereby the data furnished by any particular establishment or individual under this title can be identified; or

(3) permit anyone other than the sworn officers and employees of the Department or bureau or agency thereof to examine the individual reports.

No department, bureau, agency, officer, or employee of the Government, except the Secretary in carrying out the purposes of this title, shall require, for any reason, copies of census reports which have been retained by any such establishment or individual. Copies of census reports which have been so retained shall be immune from legal process, and shall not, without the consent of the individual or establishment concerned, be admitted as evidence or used for any purpose in any action, suit, or other judicial or administrative proceeding.

(b) The provisions of subsection (a) of this section relating to the confidential treatment of data for particular individuals and establishments, shall not apply to the censuses of governments provided for by subchapter III of chapter 5 of this title, nor to interim current data provided for by subchapter IV of chapter 5 of this title as to the subjects covered by censuses of governments, with respect to any information obtained therefor that is compiled from, or customarily provided in, public records. (Aug. 31, 1954, ch. 1158, 68 Stat. 1013, amended Oct. 15, 1962, Pub. L. 87-813, 76 Stat. 922.)

§ 11. Authorization of appropriations

There is authorized to be appropriated, out of the Treasury of the United States, such sums as may be necessary to carry out all provisions of this title. (Aug. 31, 1954, ch. 1158, 68 Stat. 1014.)

§ 12. Mechanical and electronic development

The Secretary is authorized to have conducted mechanical and electronic development work as he determines is needed to further the functions and duties of carrying out the purposes of this title and may enter into such developmental contracts as he may determine to be in the best interest of the Government. (Added Pub. L. 85-207, § 5, Aug. 28, 1957, 71 Stat. 481.)

§ 13. Procurement of professional services

The Secretary shall have authority to contract with educational and other research organizations for the preparation of monographs and other reports and materials of a similar nature. (Added Pub. L. 85-207, § 5, Aug. 28, 1957, 71 Stat. 481.)

§ 15. Leases for 1980 decennial census

The 15 percent limitation contained in section 322 of the Act of June 30, 1932 (47 Stat. 412; 40 U.S.C. 278a) shall not apply to leases entered into by the Secretary for the purpose of carrying out the 1980 decennial census, but no lease may be entered into for such purpose at a rental in excess of 105 percent of the appraised fair annual rental of the leased premises, or a proportionate part of the appraised fair annual rental in the case of a lease for less than a year.

Added Pub.L. 96-52, § 1(a), Aug. 13, 1979, 93 Stat. 358.

References in Text. Section 322 of the Act of June 30, 1932 (47 Stat. 412; 40 U.S.C. 278a), referred to in text, is part of the Legislative Branch Appropriations Act, 1933, and is set out as section 278a of

Title 40, Public Buildings, Property, and Works.

Legislative History. For legislative history and purpose of Pub.L. 96-52, see 1979 U.S.Code Cong. and Adm.News, p. 852.

SUBCHAPTER II—OFFICERS AND EMPLOYEES

§ 21. Director of the Census; duties

The Bureau shall be headed by a Director of the Census, appointed by the President, by and with the advice and consent of the Senate. The Director shall perform such duties as may be imposed upon him by law, regulations, or orders of the Secretary. (Aug. 31, 1954, ch. 1158, 68 Stat. 1014.)

§ 22. Qualifications of permanent personnel

All permanent officers and employees of the Bureau shall be citizens of the United States. (Aug. 31, 1954, ch. 1158, 68 Stat. 1014, amended Sept. 13, 1960, Pub. L. 86-769, § 1, 74 Stat. 911.)

NOTE.—Pub. L. 94-311 requires that the Department of Commerce implement an affirmative action program within the Bureau of the Census for the employment of personnel of Spanish origin or descent and submit a report to Congress by June 16, 1977 on the progress of such program.

§ 23. Additional officers and employees

(a) The Secretary may establish, at rates of compensation to be fixed by him without regard to the Classification Act of 1949, as many temporary positions as may be necessary to meet the requirements of the work provided for by law. Bureau employees who are transferred to any such temporary positions shall not lose their permanent civil service status by reason of the transfer. The Secretary may make appointments to such temporary positions in conformity with the civil service laws and rules.

(b) In addition to employees of the Department of Commerce, employees of other departments and independent offices of the Government may, with the consent of the head of the respective department or office, be employed and compensated for field work in connection with the work provided for by law without regard to section 301 of the Dual Compensation Act.

(c) The Secretary may utilize temporary staff, including employees of Federal, State, or local agencies or instrumentalities, and employees of private organizations to assist the Bureau in performing the work authorized by this title, but only if such temporary staff is sworn to observe the limitations imposed by section 9 of this title. (Aug. 31, 1954, ch. 1158, 68 Stat. 1014, amended Sept. 13, 1960, Pub. L. 86-769, § 2, 74 Stat. 911; Aug. 19, 1964, Pub. L. 88-448, title IV, § 401(p), 78 Stat. 492; Oct. 17, 1976, Pub. L. 94-521, § 12(b), 90 Stat. 2465.)

§ 24. Special employment provisions

(a) The Secretary may utilize the services of noncontemporary employees of the Bureau (by assignment, promotion, appointment, detail, or otherwise) in temporary positions established for any census, for not to exceed the period during which appropriations are available for that census. Whenever the Secretary determines that the services of an employee which have been utilized under this section are no longer required in such a temporary position, he may, without regard to the provisions of any other law, return the employee to a continuing position, with rank and compensation not less than that which he held in his last permanent position in the Bureau: *Provided*, That no employee shall, by reason of his service in a temporary position under this subsection, lose the protection of any law or regulation with respect to his separation, suspension, furlough, or reduction in rank or compensation below the level held in his last permanent position in the Bureau. Service by a noncontemporary employee in a temporary position under this subsection shall be creditable for step increases (both periodic and longevity) under title VII of the Classification Act of 1949, as amended, as though it were a continuation of service in his last permanent position.

(b) As used in this title with respect to appointments or positions, "temporary" shall be construed to mean not in excess of one year, or not in excess of the specific period during which appropriations are available for the conduct of a particular census, whichever is longer. No employee of the Bureau who holds only a temporary appointment within the meaning of this section shall be considered as other than strictly temporary for purposes of any other provision of law relating to separations, suspensions, or reductions in rank or compensation.

(c) The enlisted men and officers of the uniformed services may be appointed and compensated for service in temporary enumerator positions for the enumeration of personnel of the uniformed services.

(d) The Secretary may fix compensation on a piece-price basis without limitation as to the amount earned per diem, and payments may be made to enumerators for the use of private automobiles on official business without regard to section 4 of the Travel Expense Act of 1949, as amended (5 U.S.C. 837), but at rates not in excess of the rates provided by that Act.

(e) The Secretary may authorize the expenditure of necessary sums for travel expenses of persons selected for appointment for attendance at training courses held by the Department of Commerce with respect to any of the work provided for by law.

(f) Notwithstanding any other provision of law prohibiting the expenditure of public money for telephone service, the Secretary, under such regulations as he shall prescribe, may authorize reimbursement for tolls or charges for telephone service from private residences or private apartments to the extent such charges are determined by the Secretary to have been incurred to facilitate the collection of information in connection with the censuses and surveys authorized by this title. (Aug. 31, 1954, ch. 1158, 68 Stat. 1015, amended Sept. 13, 1960, Pub. L. 86-769, § 3, 74 Stat. 911; Aug. 31, 1964, Pub. L. 88-535; 74 Stat. 744.)

§ 25. Duties of supervisors, enumerators, and other employees

(a) Each supervisor shall perform the duties imposed upon him by the Secretary in the enforcement of chapter 5 of this title in accordance with the Secretary's orders and instructions.

(b) Each enumerator or other employee detailed to serve as enumerator shall be charged with the collection in his subdivision of the facts and statistics called for on such schedules as the Secretary determines shall be used by him in connection with any census or survey provided for by chapter 5 of this title. (Aug. 31, 1954, ch. 1158, 68 Stat. 1015, amended Aug. 31, 1964, Pub. L. 88-530, 78 Stat. 737.)

§ 26. Transportation by contract

The Secretary may contract with field employees for the rental and use within the continental limits of the United States of means of transportation, other than motorcycle, automobile, or airplane, and for the rental and use outside of the continental United States of any means of transportation, which means may be owned by the field employee. Such rental contracts shall be made without regard to section 4 of the Travel Expense Act of 1949, as amended (5 U.S.C. 837). The rentals shall be at rates equivalent to the prevailing rental rates of the locality. The rental contracts within the continental United States may be entered into only when the use by the field employee of such other means of transportation is safer, more economical, or more advantageous to the Government than use of his motorcycle, automobile, or airplane in conducting the census. (Added Pub. L. 85-207, § 6, Aug. 28, 1957, 71 Stat. 482.)

SUBCHAPTER II—POPULATION, HOUSING, AGRICULTURE, IRRIGATION, DRAINAGE, AND UNEMPLOYMENT

§ 141. Population and other census information

(a) The Secretary shall, in the year 1980 and every 10 years thereafter, take a decennial census of population as of the first day of April of such year, which date shall be known as the "decennial census date", in such form and content as he may determine, including the use of sampling procedures and special surveys. In connection with any such census, the Secretary is authorized to obtain such other census information as necessary.

(b) The tabulation of total population by States under subsection (a) of this section as required for the apportionment of Representatives in Congress among the several States shall be completed within 9 months after the census date and reported by the Secretary to the President of the United States.

(c) The officers or public bodies having initial responsibility for the legislative apportionment or districting of each State may, not later than 3 years before the decennial census date, submit to the Secretary a plan identifying the geographic areas for which specific tabulations of population are desired. Each such plan shall be developed in accordance with criteria established by the Secretary, which he shall furnish to such officers or public bodies not later than April 1 of the fourth year preceding the decennial census date. Such criteria shall include requirements which assure that such plan shall be developed in a nonpartisan manner. Should the Secretary find that a plan submitted by such officers or public bodies does not meet the criteria established by him, he shall consult to the extent necessary with such officers or public bodies in order to achieve the alterations in such plan that he deems necessary to bring it into accord with such criteria. Any issues with respect to such plan remaining unresolved after such consultation shall be resolved by the Secretary, and in all cases he shall have final authority for determining the geographic format of such plan. Tabulations of population for the areas identified in any plan approved by the Secretary shall be completed by him as expeditiously as possible after the decennial census date and reported to the Governor of the State involved and to the officers or public bodies having responsibility for legislative apportionment or districting of such State, except that such tabulations of population of each State requesting a tabulation plan, and basic tabulations of population of each other State, shall, in any event, be completed, reported, and transmitted to each respective State within one year after the decennial census date.

(d) Without regard to subsections (a), (b), and (c) of this section, the Secretary, in the year 1985 and every 10 years thereafter, shall conduct a mid-decade census of population in such form and content as he may determine, including the use of sampling procedures and

Appendix 1A. Provisions of Title 13, United States Code, Relating to 1980 Census

special surveys, taking into account the extent to which information to be obtained from such census will serve in lieu of information collected annually or less frequently in surveys or other statistical studies. The census shall be taken as of the first day of April of each such year, which date shall be known as the "mid-decade census date".

(e) (1) If—

(A) in the administration of any program established by or under Federal law which provides benefits to State or local governments or to other recipients, eligibility for or the amount of such benefits would (without regard to this paragraph) be determined by taking into account data obtained in the most recent decennial census, and

(B) comparable data is obtained in a mid-decade census conducted after such decennial census, then in the determination of such eligibility or amount of benefits the most recent data available from either the mid-decade or decennial census shall be used.

(2) Information obtained in any mid-decade census shall not be used for apportionment of Representatives in Congress among the several States, nor shall such information be used in prescribing congressional districts.

(f) With respect to each decennial and mid-decade census conducted under subsection (a) or (d) of this section, the Secretary shall submit to the committees of Congress having legislative jurisdiction over the census—

(1) not later than 3 years before the appropriate census date, a report containing the Secretary's determination of the subjects proposed to be included, and the types of information to be compiled, in such census;

(2) not later than 2 years before the appropriate census date, a report containing the Secretary's determination of the questions proposed to be included in such census; and

(3) after submission of a report under paragraph (1) or (2) of this subsection and before the appropriate census date, if the Secretary finds new circumstances exist which necessitate that the subjects, types of information, or questions contained in reports so submitted be modified, a report containing the Secretary's determination of the subjects, types of information, or questions as proposed to be modified.

(g) As used in this section, "census of population" means a census of population, housing, and matters relating to population and housing. (Aug. 31, 1954, ch. 1158, 68 Stat. 1019, amended Aug. 28, 1957, Pub. L. 85-207, § 9, 71 Stat. 483; Dec. 23, 1975, Pub. L. 94-171, § 1, 89 Stat. 1023; Oct. 17, 1976, Pub. L. 94-521, § 7, 90 Stat. 2461-62.)

NOTE.—(a) Pub. L. 94-311 requires the Department of Commerce, in cooperation with appropriate Federal, State and local agencies and various population study groups and experts, to undertake a study to determine what steps would be necessary for developing creditable estimates of undercounts of Americans of Spanish origin or descent in future censuses.

(b) Pub. L. 94-311 also requires that the Secretary of Commerce ensure that, in the Bureau of the Census data-collection activities, the needs and concerns of the Spanish-origin population are given full recognition through the use of Spanish language questionnaires, bilingual enumerators, and other such methods as deemed appropriate by the Secretary.

SUBCHAPTER V—GEOGRAPHIC SCOPE, PRELIMINARY AND SUPPLEMENTAL STATISTICS, AND USE OF SAMPLING

§ 191. Geographic scope of censuses

(a) Each of the censuses authorized by this chapter shall include each State, the District of Columbia, the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and the Commonwealth of Puerto Rico, and as may be determined by the Secretary, such other possessions and areas over which the United States exer-

cises jurisdiction, control, or sovereignty. Inclusion of other areas over which the United States exercises jurisdiction or control shall be subject to the concurrence of the Secretary of State.

(b) For censuses taken in the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, or any possession or area not specifically designated in subsection (a) of this section, the Secretary may use census information collected by the Governor or highest ranking Federal official, if such information was obtained in accordance with plans prescribed or approved by the Secretary.

(c) If, pursuant to a determination by the Secretary under subsection (a) of this section, any census is not taken in a possession or area over which the United States exercises jurisdiction, control, or sovereignty, the Secretary may include data obtained from other Federal agencies or government sources in the census report. Any data obtained from foreign governments shall be obtained through the Secretary of State. (Added Pub. L. 85-207, § 14, Aug. 28, 1957, 71 Stat. 483, amended Oct. 17, 1976, -Pub. L. 94-521, § 9, 90 Stat. 2463-64.)

§ 193. Preliminary and supplemental statistics

In advance of, in conjunction with, or after the taking of each census provided for by this chapter, the Secretary may make surveys and collect such preliminary and supplementary statistics related to the main topic of the census as are necessary to the initiation, taking, or completion thereof. (Added Pub. L. 85-207, § 14, Aug. 28, 1957, 71 Stat. 484.)

§ 195. Use of sampling

Except for the determination of population for purposes of apportionment of Representatives in Congress among the several States, the Secretary shall, if he considers it feasible, authorize the use of the statistical method known as "sampling" in carrying out the provisions of this title. (Added Pub. L. 85-207, § 14, Aug. 28, 1957, 71 Stat. 484, amended Oct. 17, 1976, Pub. L. 94-521, § 10, 90 Stat. 2464.)

§ 196. Special censuses

The Secretary may conduct special censuses for the government of any State, or of any county, city, or other political subdivision within a State, for the government of the District of Columbia, and for the government of any possession or area (including political subdivisions thereof) referred to in section 191(a) of this title, on subjects covered by the censuses provided for in this title, upon payment to the Secretary of the actual or estimated cost of each such special census. The results of each such special census shall be designated "Official Census Statistics". These statistics may be used in the manner provided by applicable law. (Added Pub. L. 94-521, § 11, Oct. 17, 1976, 90 Stat. 2464.)

Chapter 7.—OFFENSES AND PENALTIES

SUBCHAPTER I—OFFICERS AND EMPLOYEES

Sec.

211. Receiving or securing compensation for appointment of employees.
212. Refusal or neglect of employees to perform duties.
213. False statements, certificates, and information.
214. Wrongful disclosure of information.

SUBCHAPTER II—OTHER PERSONS

221. Refusal or neglect to answer questions; false answers.
222. Giving suggestions or information with intent to cause inaccurate enumeration of population.
223. Refusal, by owners, proprietors, etc., to assist census employees.
224. Failure to answer questions affecting companies, businesses, religious bodies, and other organizations; false answers.
225. Applicability of penal provisions in certain cases.

SUBCHAPTER III—PROCEDURE

241. Evidence.

SUBCHAPTER I—OFFICERS AND EMPLOYEES

§ 211. Receiving or securing compensation for appointment of employees

Whoever—

(1) receives or secures to himself any fee, reward, or compensation as a consideration for the appointment of any person as supervisor, enumerator, clerk, or other officer or employee of the Department of Commerce or bureau or agency thereof, referred to in subchapter II of chapter I of this title; or

(2) in any way receives or secures to himself any part of the compensation paid to any person so appointed—

shall be fined not more than \$3,000 or imprisoned not more than five years, or both. (Aug. 31, 1954, ch. 1158, 68 Stat. 1022.)

§ 212. Refusal or neglect of employees to perform duties

Whoever, being an employee referred to in subchapter II of chapter I of this title, and having taken and subscribed the oath of office, neglects or refuses, without justifiable cause, to perform the duties enjoined on such employee by this title, shall be fined not more than \$500. (Aug. 31, 1954, ch. 1158, 68 Stat. 1022.)

§ 213. False statements, certificates, and information

(a) Whoever, being an officer or employee referred to in subchapter II of chapter I of this title, willfully and knowingly swears or affirms falsely as to the truth of any statement required to be made or subscribed by him under oath by or under authority of this title, shall be guilty of perjury, and shall be fined not more than \$2,000 or imprisoned not more than five years, or both.

(b) Whoever, being an officer or employee referred to in subchapter II of chapter I of this title—

(1) willfully and knowingly makes a false certificate or fictitious return; or

(2) knowingly or willfully furnishes or causes to be furnished, or, having been such an officer or employee, knowingly or willfully furnished or caused to be furnished, directly or indirectly, to the Secretary or to any other officer or employee of the Department of Commerce or bureau or agency thereof, any false statement or false information with reference to any inquiry for which he was authorized and required to collect information provided for in this title—

shall be fined not more than \$2,000 or imprisoned not more than five years, or both. (Aug. 31, 1954, ch. 1158, 68 Stat. 1022.)

§ 214. Wrongful disclosure of information

Whoever, being or having been an employee or staff member referred to in subchapter II of chapter I of this title, having taken and subscribed the oath of office, or having sworn to observe the limitations imposed by section 9 of this title, publishes or communicates any information, the disclosure of which is prohibited under the provisions of section 9 of this title, and which comes into his possession by reason of his being employed (or otherwise providing services) under the provisions of this title, shall be fined not more than \$5,000 or imprisoned not more than 5 years, or both. (Aug. 31, 1954, ch. 1158, 68 Stat. 1023, amended Oct. 17, 1976, Pub. L. 94-521, § 12(a), 90 Stat. 2464.)

SUBCHAPTER II—OTHER PERSONS

§ 221. Refusal or neglect to answer questions; false answers

(a) Whoever, being over eighteen years of age, refuses or willfully neglects, when requested by the Secretary, or by any other authorized officer or employee of the Department of Commerce or bureau or agency thereof acting under the instructions of the Secretary or authorized officer, to answer, to the best of his knowledge, any of the questions on any schedule submitted to him in connection with any

census or survey provided for by subchapters I, II, IV, and V of chapter 5 of this title, applying to himself or to the family to which he belongs or is related, or to the farm or farms of which he or his family is the occupant, shall be fined not more than \$100.

(b) Whoever, when answering questions described in subsection (a) of this section, and under the conditions or circumstances described in such subsection, willfully gives any answer that is false, shall be fined not more than \$500.

(c) Notwithstanding any other provision of this title, no person shall be compelled to disclose information relative to his religious beliefs or to membership in a religious body. (Aug. 31, 1954, ch. 1158, 68 Stat. 1023, amended Aug. 28, 1957, Pub. L. 85-207, § 15, 71 Stat. 484; Oct. 17, 1976, Pub. L. 94-521, § 12, 90 Stat. 2465.)

§ 222. Giving suggestions or information with intent to cause inaccurate enumeration of population

Whoever, either directly or indirectly, offers or renders to any officer or employee of the Department of Commerce or bureau or agency thereof engaged in making an enumeration of population under subchapter II, IV, or V of chapter 5 of this title, any suggestion, advice, information or assistance of any kind, with the intent or purpose of causing an inaccurate enumeration of population to be made, shall be fined not more than \$1,000 or imprisoned not more than one year, or both. (Aug. 31, 1954, ch. 1158, 68 Stat. 1023, amended Aug. 28, 1957, Pub. L. 85-207, § 16, 71 Stat. 484.)

§ 223. Refusal, by owners, proprietors, etc., to assist census employees

Whoever, being the owner, proprietor, manager, superintendent, or agent of any hotel, apartment house, boarding or lodging house, tenement, or other building, refuses or willfully neglects, when requested by the Secretary or by any other officer or employee of the Department of Commerce or bureau or agency thereof, acting under the instructions of the Secretary, to furnish the names of the occupants of such premises, or to give free ingress thereto and egress therefrom to any duly accredited representative of such Department or bureau or agency thereof, so as to permit the collection of statistics with respect to any census provided for in subchapters I and II of chapter 5 of this title, or any survey authorized by subchapter IV or V of such chapter insofar as such survey relates to any of the subjects for which censuses are provided by such subchapters I and II, including, when relevant to the census or survey being taken or made, the proper and correct enumeration of all persons having their usual place of abode in such premises, shall be fined not more than \$500. (Aug. 31, 1954, ch. 1158, 68 Stat. 1023, amended Aug. 28, 1957, Pub. L. 85-207, § 17, 71 Stat. 484.)

§ 225. Applicability of penal provisions in certain cases

(a) In connection with any survey conducted by the Secretary or other authorized officer or employee of the Department of Commerce or bureau or agency thereof pursuant to subchapter IV of chapter 5 of this title, the provisions of sections 221, 222, 223 and 224 of this title shall apply—

(1) with respect to the answering of questions and furnishing of information, only to such inquiries as are within the scope of the schedules and questionnaires and of the type and character heretofore used in connection with the taking of complete censuses under subchapters I and II of chapter 5 of this title, or in connection with any censuses hereafter taken pursuant to such subchapters;

(2) only after publication of a determination with reasons therefor certified by the Secretary, or by some other authorized officer or employee of the Department of Commerce or bureau or agency thereof with the approval of the Secretary, that the information called for is needed to aid or permit the efficient performance of

essential governmental functions or services, or has significant application to the needs of the public, business, or industry and is not publicly available from nongovernmental or other governmental sources;

(3) in the case of any new survey, only after public notice given by the Secretary or other authorized officer or employee of the Department of Commerce or bureau or agency thereof at least thirty days in advance of requesting a return, that such survey is under consideration.

(b) The provisions for imprisonment provided by section 222 of this title shall not apply in connection with any survey conducted pursuant to subchapter II of chapter 3 of this title, or to subchapter IV of chapter 5 of this title.

(c) The provisions of sections 221, 222, 223, and 224 of this title shall not apply to any censuses or surveys of governments provided for by subchapters III and IV of chapter 5 of this title, nor to other surveys provided for by subchapter IV of such chapter which are taken more frequently than annually.

(d) Where the doctrine, teaching, or discipline of any religious denomination or church prohibits the disclosure of information relative to membership, a refusal, in such circumstances, to furnish such information shall not be an offense under this chapter. (Aug. 31, 1954, ch. 1158, 68 Stat. 1024, amended Oct. 17, 1976, Pub. L. 94-521, § 15(a), 90 Stat. 2465.)

SUBCHAPTER III—PROCEDURE

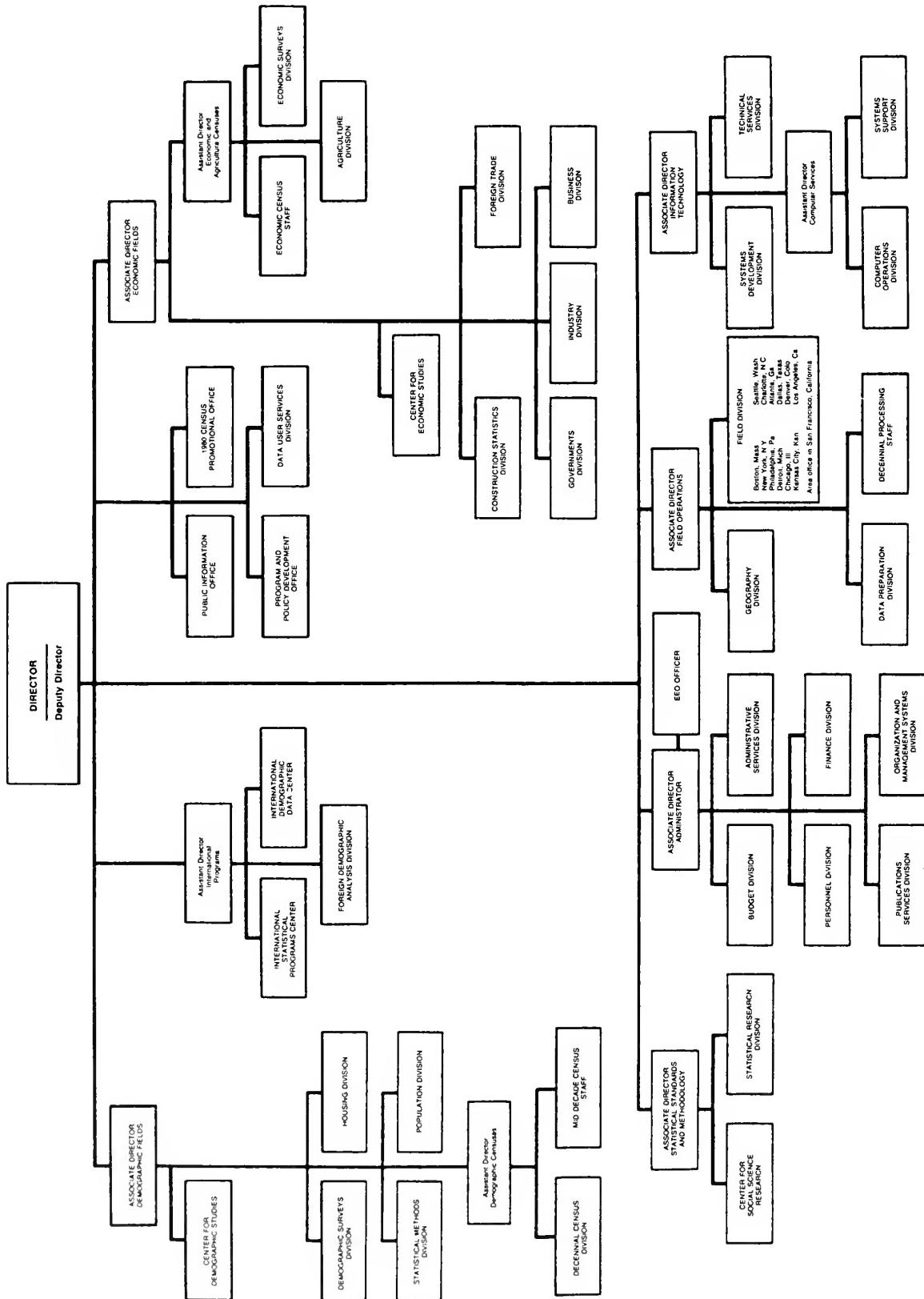
§ 241. Evidence

When any request for information, made by the Secretary or other authorized officer or employee of the Department of Commerce or bureau or agency thereof, is made by registered or certified mail or telegram, the return receipt therefor or other written receipt thereof shall be *prima facie* evidence of an official request in any prosecution under such section. (Aug. 31, 1954, ch. 1158, 68 Stat. 1025, amended Aug. 28, 1957, Pub. L. 85-207, § 19, 71 Stat. 484; Oct. 17, 1976, Pub. L. 94-521, § 15(b), 90 Stat. 2465.)

Appendix 1B. Census Bureau Organizational Structure: August 1980

EXHIBIT 1 to 0000 35 28

U.S. DEPARTMENT OF COMMERCE
Bureau of the Census



Appendix 1C. Census Days: 1790 to 1980

1790-1820	First Monday in August
1830-1900	June 1
1910	April 15
1920	January 1
1930-80	April 1

The Census Act approved on March 1, 1790, set the reference date (Census Day) as the first Monday in August 1790, to comply with the constitutional provision that the "actual enumeration shall be made within three years after the first meeting of the Congress ...," and to allow the U.S. marshals time to organize their data-collection operations. As the enumeration took

9 months or more every decade, a significant part of the work took place in the winter. Therefore, in 1830 Congress agreed to move Census Day back to June 1, where it remained until 1910, when the date was moved back still further—to April 15. In 1900, the enumeration was substantially completed in 90 days, and in 1910 in 30 days. For 1920, Census Day was moved to January 1, under the assumption that the enumerators, who took both the population and agriculture censuses at the same time, would find farmers both at home and with data for calendar 1919 readily at hand. The winter weather caused so many delays that for 1930, Congress moved Census Day to April 1. This date was subsequently codified in title 13, section 141.1 (see app. 1A).

Appendix 1D. Special Residence Rules

Members of the Armed Forces living on a military installation were counted, as in every previous census, as residents of the area in which the base was located; members not living "on base" were counted as residents of the area in which they were living on Census Day. Persons in families with Armed Forces personnel were counted where they were living on Census Day (i.e., the military installation or "off base," as the case might be).

Each naval ship was allotted to the facility that the Department of the Navy designated as its home port, except for those of the Sixth and Seventh Fleets, which were deployed overseas on Census Day (these were considered part of the overseas population, because of their long-term overseas assignments). In home ports with fewer than 1,000 naval personnel assigned to ships, the crews were counted aboard the ship. In home ports with 1,000 or more naval personnel assigned to ships, the personnel who indicated that they had a usual residence within 50 miles of the home port of their ship were attributed to that residence, and those who did not so indicate were counted aboard ship. When a home port was split between more than one municipality, ships berthed in the home port on Census Day were assigned by the Bureau to the municipality in which the land immediately adjacent to the dock or pier was actually located.

Other ships attributed by the Navy to that home port, but which were not physically present and not deployed to the Sixth or Seventh Fleets on Census Day, were allocated to the facility names on the Navy's home-port list.

If a U.S. merchant vessel was berthed in a U.S. port on Census Day, the crew was enumerated at that port. If the ship was not docked in a U.S. port but was within the territorial waters of the United States, the crew was enumerated at the port of destination, if in the United States, or at the home port of the ship if its destination was outside the United States. Crews of

U.S. flag vessels that were outside American waters on Census Day and crews of vessels flying a foreign flag were not enumerated in the 1980 census.

College students were counted as residents of the areas in which they were living while attending school, as they had been since 1950. However, children in boarding schools below the college level were counted at their parental homes.

Inmates of institutions who ordinarily live there for considerable periods of time were counted as residents of the area where the institution was located. Patients in general hospitals for a short period of time were counted at their usual place of residence, or if they had none, at the hospital.

Persons in hotels and motels on the night of March 31, 1980, were requested to fill out an individual census report and were assigned to their home areas if they indicated that no one was at home to report them to the census. A similar approach was used for persons visiting in private residences, as well as for Americans who left the United States during March 1980 via major intercontinental air or ship carriers for temporary travel abroad. In addition, information on persons away from their usual places of residence was obtained from other members of their families, resident managers, or neighbors. If an entire household was expected to be away during the whole period of the enumeration, information on that household was obtained from neighbors. A matching process was used to eliminate duplicate reports for persons who reported for themselves while away from their usual residence and who were also reported at this usual residence by someone else.

A special enumeration was conducted in missions, flophouses, jails, detention centers, etc., on the night of April 6, 1980, and persons enumerated therein were counted as residents of the area in which the establishment was located.

Appendix 1E. Facsimile of 1980 Census Long-Form Questionnaire

This appendix contains a facsimile of the long-form questionnaire that was used to enumerate a sample of the households in the 1980 census. The cover, page 1, and the back page were essentially the same as their counterparts on the short-form questionnaire. In addition to question 1 on page 1, the short form contained only population items 2-7 on page 2 and housing items H1-H12 on page 3. All other questions were unique to the long form. Person columns 3-6 have been omitted, but were identical to columns 1, 2, and 7, which are shown. Pages 8-19, which were the ones used to enumerate persons in columns 2-7 in a household, also have been omitted.

Please fill out this
official Census Form
and mail it back on
Census Day,
Tuesday, April 1, 1980

1980 Census of the United States

If the address shown below has the wrong apartment identification,
please write the correct apartment number or location here:

• _____
• _____
• _____

DO	A1	A2	A4	A5	A6
L					

Your answers are confidential

By law (title 13, U.S. Code), census employees are subject to fine and/or imprisonment for any disclosure of your answers. Only after 72 years does your information become available to other government agencies or the public. The same law requires that you answer the questions to the best of your knowledge.

Para personas de habla hispana

(For Spanish-speaking persons):

SI USTED DESEA UN CUESTIONARIO DEL CENSO EN ESPAÑOL
llame a la oficina del censo. El número de teléfono se encuentra en
el encasillado de la dirección.

O, si prefiere, marque esta casilla y devuelva el cuestionario
por correo en el sobre que se le incluye.

U S Department of Commerce
Bureau of the Census
Form D-2

A message from the Director, Bureau of the Census . . .

We must, from time to time, take stock of ourselves as a people if our Nation is to meet successfully the many national and local challenges we face. This is the purpose of the 1980 census.

The essential need for a population census was recognized almost 200 years ago when our Constitution was written. As provided by article I, the first census was conducted in 1790 and one has been taken every 10 years since then.

The law under which the census is taken protects the confidentiality of your answers. For the next 72 years — or until April 1, 2052 — only sworn census workers have access to the individual records, and no one else may see them.

Your answers, when combined with the answers from other people, will provide the statistical figures needed by public and private groups, schools, business and industry, and Federal, State, and local governments across the country. These figures will help all sectors of American society understand how our population and housing are changing. In this way, we can deal more effectively with today's problems and work toward a better future for all of us.

The census is a vitally important national activity. Please do your part by filling out this census form accurately and completely. If you mail it back promptly in the enclosed postage-paid envelope, it will save the expense and inconvenience of a census taker having to visit you.

Thank you for your cooperation.

Form Approved
OMB No. 41-S78006

Please continue →

How to fill out your Census Form

See the filled-out example in the yellow instruction guide. This guide will help with any problems you may have.

If you need more help, call the Census Office. The telephone number of the local office is shown at the bottom of the address box on the front cover.

Use a black pencil to answer the questions. Black pencil is better to use than ballpoint or other pens.

Fill circles "O" completely, like this: ●

When you write in an answer, print or write clearly.

Make sure that answers are provided for everyone here.

See page 4 of the guide if a roomer or someone else in the household does not want to give you all the information for the form.

Answer the questions on pages 1 through 5, and then starting with pages 6 and 7, fill a pair of pages for each person in the household.

Check your answers. Then write your name, the date, and telephone number on page 20.

Mail back this form on Tuesday, April 1, or as soon afterward as you can. Use the enclosed envelope; no stamp is needed.

Please start by answering Question 1 below.

Question 1

List in Question 1

- Family members living here, including babies still in the hospital.
- Relatives living here.
- Lodgers or boarders living here.
- Other persons living here.
- College students who stay here while attending college, even if their parents live elsewhere.
- Persons who usually live here but are temporarily away (including children in boarding school below the college level).
- Persons with a home elsewhere but who stay here most of the week while working

1. What is the name of each person who was living here on Tuesday, April 1, 1980, or who was staying or visiting here and had no other home?

Do Not List in Question 1

- Any person away from here in the Armed Forces.
- Any college student who stays somewhere else while attending college.
- Any person who usually stays somewhere else most of the week while working there.
- Any person away from here in an institution such as a home for the aged or mental hospital.
- Any person staying or visiting here who has a usual home elsewhere.

Note

If everyone here is staying only temporarily and has a usual home elsewhere, please mark this box .

Then please:

- answer the questions on pages 2 through 5 only, and
- enter the address of your usual home on page 20.

Please continue →

Appendix 1E. Facsimile of 1980 Census Long-Form Questionnaire

Page 2

ALSO ANSWER THE HOUSING QUESTIONS ON PAGE 3

Here are the QUESTIONS ↓		PERSON in column 1			PERSON in column 2			PERSON in column 3																																																															
These are the columns for ANSWERS → Please fill one column for each person listed in Question 1.		Last name		Last name		Last name		Last name																																																															
		First name		Middle initial		First name		Middle initial																																																															
2. How is this person related to the person in column 1? Fill one circle. If "Other relative" of person in column 1, give exact relationship, such as mother-in-law, niece, grandson, etc.		<p>START in this column with the household member (or one of the members) in whose name the home is owned or rented. If there is no such person, start in this column with any adult household member.</p>			<p>If relative of person in column 1:</p> <ul style="list-style-type: none"> <input type="radio"/> Husband/wife <input type="radio"/> Son/daughter <input type="radio"/> Brother/sister <input type="radio"/> Father/mother <input type="radio"/> Other relative <p>If not related to person in column 1:</p> <ul style="list-style-type: none"> <input type="radio"/> Roomer, boarder <input type="radio"/> Partner, roommate <input type="radio"/> Paid employee <input type="radio"/> Other nonrelative 			<p>If relative of person in column 1:</p> <ul style="list-style-type: none"> <input type="radio"/> Husband/wife <input type="radio"/> Son/daughter <input type="radio"/> Brother/sister <input type="radio"/> Father/mother <input type="radio"/> Other relative <p>If not related to person in column 1:</p> <ul style="list-style-type: none"> <input type="radio"/> Roomer, boarder <input type="radio"/> Partner, roommate <input type="radio"/> Paid employee <input type="radio"/> Other nonrelative 																																																															
3. Sex Fill one circle.		<input type="radio"/> Male		<input checked="" type="checkbox"/>		<input type="radio"/> Female		<input type="radio"/> Male		<input checked="" type="checkbox"/>		<input type="radio"/> Female																																																											
4. Is this person — Fill one circle.		<ul style="list-style-type: none"> <input type="radio"/> White <input type="radio"/> Black or Negro <input type="radio"/> Japanese <input type="radio"/> Chinese <input type="radio"/> Filipino <input type="radio"/> Korean <input type="radio"/> Vietnamese <input type="radio"/> Indian (Amer.) <p><i>Print tribe</i> →</p>			<ul style="list-style-type: none"> <input type="radio"/> Asian Indian <input type="radio"/> Hawaiian <input type="radio"/> Guamanian <input type="radio"/> Samoan <input type="radio"/> Eskimo <input type="radio"/> Aleut <input type="radio"/> Other — <i>Specify</i> 			<ul style="list-style-type: none"> <input type="radio"/> White <input type="radio"/> Black or Negro <input type="radio"/> Japanese <input type="radio"/> Chinese <input type="radio"/> Filipino <input type="radio"/> Korean <input type="radio"/> Vietnamese <input type="radio"/> Indian (Amer.) <p><i>Print tribe</i> →</p>			<ul style="list-style-type: none"> <input type="radio"/> Asian Indian <input type="radio"/> Hawaiian <input type="radio"/> Guamanian <input type="radio"/> Samoan <input type="radio"/> Eskimo <input type="radio"/> Aleut <input type="radio"/> Vietnamese <input type="radio"/> Other — <i>Specify</i> 																																																												
5. Age, and month and year of birth a. Print age at last birthday. b. Print month and fill one circle. c. Print year in the spaces, and fill one circle below each number.		a. Age at last birthday		c. Year of birth		a. Age at last birthday		c. Year of birth		a. Age at last birthday		c. Year of birth																																																											
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6. Marital status Fill one circle.		<input type="radio"/> Now married		<input type="radio"/> Separated		<input type="radio"/> Now married		<input type="radio"/> Separated		<input type="radio"/> Now married		<input type="radio"/> Separated																																																											
		<input type="radio"/> Widowed		<input type="radio"/> Never married		<input type="radio"/> Widowed		<input type="radio"/> Never married		<input type="radio"/> Widowed		<input type="radio"/> Never married																																																											
7. Is this person of Spanish/Hispanic origin or descent? Fill one circle.		<ul style="list-style-type: none"> <input type="radio"/> No (not Spanish/Hispanic) <input type="radio"/> Yes, Mexican, Mexican-Amer., Chicano <input type="radio"/> Yes, Puerto Rican <input type="radio"/> Yes, Cuban <input type="radio"/> Yes, other Spanish/Hispanic 			<ul style="list-style-type: none"> <input type="radio"/> No (not Spanish/Hispanic) <input type="radio"/> Yes, Mexican, Mexican-Amer., Chicano <input type="radio"/> Yes, Puerto Rican <input checked="" type="checkbox"/> <input type="radio"/> Yes, Cuban <input type="radio"/> Yes, other Spanish/Hispanic 			<ul style="list-style-type: none"> <input type="radio"/> No (not Spanish/Hispanic) <input type="radio"/> Yes, Mexican, Mexican-Amer., Chicano <input type="radio"/> Yes, Puerto Rican <input checked="" type="checkbox"/> <input type="radio"/> Yes, Cuban <input type="radio"/> Yes, other Spanish/Hispanic 			<ul style="list-style-type: none"> <input type="radio"/> No (not Spanish/Hispanic) <input type="radio"/> Yes, Mexican, Mexican-Amer., Chicano <input type="radio"/> Yes, Puerto Rican <input checked="" type="checkbox"/> <input type="radio"/> Yes, Cuban <input type="radio"/> Yes, other Spanish/Hispanic 																																																												
8. Since February 1, 1980, has this person attended regular school or college at any time? Fill one circle. Count nursery school, kindergarten, elementary school, and schooling which leads to a high school diploma or college degree.		<ul style="list-style-type: none"> <input type="radio"/> No, has not attended since February 1 <input type="radio"/> Yes, public school, public college <input type="radio"/> Yes, private, church-related <input type="radio"/> Yes, private, not church-related 			<ul style="list-style-type: none"> <input type="radio"/> No, has not attended since February 1 <input type="radio"/> Yes, public school, public college <input type="radio"/> Yes, private, church-related <input type="radio"/> Yes, private, not church-related 			<ul style="list-style-type: none"> <input type="radio"/> No, has not attended since February 1 <input type="radio"/> Yes, public school, public college <input type="radio"/> Yes, private, church-related <input type="radio"/> Yes, private, not church-related 			<ul style="list-style-type: none"> <input type="radio"/> No, has not attended since February 1 <input type="radio"/> Yes, public school, public college <input type="radio"/> Yes, private, church-related <input type="radio"/> Yes, private, not church-related 																																																												
9. What is the highest grade (or year) of regular school this person has ever attended? Fill one circle.		Highest grade attended: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>Nursery school</td></tr> <tr><td>Kindergarten</td></tr> </table>			Nursery school	Kindergarten	Highest grade attended: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>Nursery school</td></tr> <tr><td>Kindergarten</td></tr> </table>			Nursery school	Kindergarten	Highest grade attended: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>Nursery school</td></tr> <tr><td>Kindergarten</td></tr> </table>			Nursery school	Kindergarten	Highest grade attended: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>Nursery school</td></tr> <tr><td>Kindergarten</td></tr> </table>			Nursery school	Kindergarten																																																		
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10. Did this person finish the highest grade (or year) attended? Fill one circle.		<ul style="list-style-type: none"> <input type="radio"/> Now attending this grade (or year) <input type="radio"/> Finished this grade (or year) <input type="radio"/> Did not finish this grade (or year) 			<ul style="list-style-type: none"> <input type="radio"/> Now attending this grade (or year) <input type="radio"/> Finished this grade (or year) <input type="radio"/> Did not finish this grade (or year) 			<ul style="list-style-type: none"> <input type="radio"/> Now attending this grade (or year) <input type="radio"/> Finished this grade (or year) <input type="radio"/> Did not finish this grade (or year) 			<ul style="list-style-type: none"> <input type="radio"/> Now attending this grade (or year) <input type="radio"/> Finished this grade (or year) <input type="radio"/> Did not finish this grade (or year) 																																																												
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		<input type="radio"/> I		<input type="radio"/> N		<input type="radio"/> I		<input type="radio"/> N		<input type="radio"/> I		<input type="radio"/> N																																																											

Appendix 1E. Facsimile of 1980 Census Long-Form Questionnaire

Page 3

PERSON in column 7											
Last name											
First name	Middle initial										
If relative of person in column 1:											
<input type="radio"/> Husband/wife	<input type="radio"/> Father/mother										
<input type="radio"/> Son/daughter	<input type="radio"/> Other relative										
<input type="radio"/> Brother/sister											
If not related to person in column 1:											
<input type="radio"/> Roomer, boarder	<input type="radio"/> Other										
<input type="radio"/> Partner, roommate	nonrelative										
<input type="radio"/> Paid employee											
<input type="radio"/> Male	<input checked="" type="checkbox"/>	<input type="radio"/> Female									
<input type="radio"/> White	<input type="radio"/> Asian Indian										
<input type="radio"/> Black or Negro	<input type="radio"/> Hawaiian										
<input type="radio"/> Japanese	<input type="radio"/> Guamanian										
<input type="radio"/> Chinese	<input type="radio"/> Samoan										
<input type="radio"/> Filipino	<input type="radio"/> Eskimo										
<input type="radio"/> Korean	<input type="radio"/> Aleut										
<input type="radio"/> Vietnamese	<input type="radio"/> Other — <i>Specify</i>										
<input type="radio"/> Indian (Amer.)											
<i>Print tribe</i> →											
a. Age at last birthday	c. Year of birth										
	1										
	1 ● 8 ○	0 ○ 0 ○									
	19 ○	1 ○ 1 ○									
b. Month of birth											
	1										
<input type="radio"/> Jan.—Mar.	<input checked="" type="checkbox"/>										
<input type="radio"/> Apr.—June											
<input type="radio"/> July—Sept.											
<input type="radio"/> Oct.—Dec.											
<input type="radio"/> Now married	<input type="radio"/> Separated										
<input type="radio"/> Widowed	<input type="radio"/> Never married										
<input type="radio"/> Divorced											
<input type="radio"/> No (not Spanish/Hispanic)											
<input type="radio"/> Yes, Mexican, Mexican-Amer., Chicano											
<input type="radio"/> Yes, Puerto Rican	<input checked="" type="checkbox"/>										
<input type="radio"/> Yes, Cuban											
<input type="radio"/> Yes, other Spanish/Hispanic											
<input type="radio"/> No, has not attended since February 1											
<input type="radio"/> Yes, public school, public college											
<input type="radio"/> Yes, private, church-related											
<input type="radio"/> Yes, private, not church-related											
Highest grade attended:											
<input type="radio"/> Nursery school	<input type="radio"/> Kindergarten										
Elementary through high school (grade or year)											
1	2	3	4	5	6	7	8	9	10	11	12
○	○	○	○	○	○	○	○	○	○	○	○
College (academic year)											
1	2	3	4	5	6	7	8 or more				
○	○	○	○	○	○	○	○				
<input type="radio"/> Never attended school— <i>Skip question 10</i>											
<input type="radio"/> Now attending this grade (or year)											
<input type="radio"/> Finished this grade (or year)											
<input type="radio"/> Did not finish this grade (or year)											
CENSUS USE ONLY	A.	○	1	○	N	○	○				

*If you listed more than
7 persons in Question 1,
please see note on page 20.*

**NOW PLEASE ANSWER QUESTIONS H1–H12
FOR YOUR HOUSEHOLD**

H1. Did you leave anyone out of Question 1 because you were not sure if the person should be listed — for example, a new baby still in the hospital, a lodger who also has another home, or a person who stays here once in a while and has no other home?		H9. Is this apartment (house) part of a condominium?																									
<input type="radio"/> Yes — On page 20 give name(s) and reason left out. <input type="radio"/> No		<input type="radio"/> No <input type="radio"/> Yes, a condominium																									
H2. Did you list anyone in Question 1 who is away from home now — for example, on a vacation or in a hospital?		H10. If this is a one-family house —																									
<input type="radio"/> Yes — On page 20 give name(s) and reason person is away. <input type="radio"/> No		a. Is the house on a property of 10 or more acres? <input type="radio"/> Yes <input checked="" type="checkbox"/> b. Is any part of the property used as a commercial establishment or medical office? <input type="radio"/> Yes <input type="radio"/>																									
H3. Is anyone visiting here who is not already listed?		H11. If you live in a one-family house or a condominium unit which you own or are buying —																									
<input type="radio"/> Yes — On page 20 give name of each visitor for whom there is no one at the home address to report the person to a census taker. <input type="radio"/> No		What is the value of this property, that is, how much do you think this property (house and lot or condominium unit) would sell for if it were for sale? <p><i>Do not answer this question if this is —</i></p> <input checked="" type="checkbox"/> <ul style="list-style-type: none"> • A mobile home or trailer • A house on 10 or more acres • A house with a commercial establishment or medical office on the property 																									
H4. How many living quarters, occupied and vacant, are at this address?		<input type="radio"/> One <input type="radio"/> 2 apartments or living quarters <input type="radio"/> 3 apartments or living quarters <input type="radio"/> 4 apartments or living quarters <input type="radio"/> 5 apartments or living quarters <input type="radio"/> 6 apartments or living quarters <input type="radio"/> 7 apartments or living quarters <input type="radio"/> 8 apartments or living quarters <input type="radio"/> 9 apartments or living quarters <input type="radio"/> 10 or more apartments or living quarters <input type="radio"/> This is a mobile home or trailer																									
H5. Do you enter your living quarters —		<input type="radio"/> Less than \$10,000 <input type="radio"/> \$50,000 to \$54,999 <input type="radio"/> \$10,000 to \$14,999 <input type="radio"/> \$55,000 to \$59,999 <input type="radio"/> \$15,000 to \$17,499 <input type="radio"/> \$60,000 to \$64,999 <input type="radio"/> \$17,500 to \$19,999 <input type="radio"/> \$65,000 to \$69,999 <input type="radio"/> \$20,000 to \$22,499 <input type="radio"/> \$70,000 to \$74,999 <input type="radio"/> \$22,500 to \$24,999 <input type="radio"/> \$75,000 to \$79,999 <input type="radio"/> \$25,000 to \$27,499 <input type="radio"/> \$80,000 to \$89,999 <input type="radio"/> \$27,500 to \$29,999 <input type="radio"/> \$90,000 to \$99,999 <input type="radio"/> \$30,000 to \$34,999 <input type="radio"/> \$100,000 to \$124,999 <input type="radio"/> \$35,000 to \$39,999 <input type="radio"/> \$125,000 to \$149,999 <input type="radio"/> \$40,000 to \$44,999 <input type="radio"/> \$150,000 to \$199,999 <input type="radio"/> \$45,000 to \$49,999 <input type="radio"/> \$200,000 or more																									
H6. Do you have complete plumbing facilities in your living quarters, that is, hot and cold piped water, a flush toilet, and a bathtub or shower?		H12. If you pay rent for your living quarters —																									
<input type="radio"/> Yes, for this household only <input type="radio"/> Yes, but also used by another household <input type="radio"/> No, have some but not all plumbing facilities <input type="radio"/> No plumbing facilities in living quarters		What is the monthly rent? <i>If rent is not paid by the month, see the instruction guide on how to figure a monthly rent.</i> <table border="1"> <tr> <td><input type="radio"/> Less than \$50</td> <td><input type="radio"/> \$160 to \$169</td> </tr> <tr> <td><input type="radio"/> \$50 to \$59</td> <td><input type="radio"/> \$170 to \$179</td> </tr> <tr> <td><input type="radio"/> \$60 to \$69</td> <td><input type="radio"/> \$180 to \$189</td> </tr> <tr> <td><input type="radio"/> \$70 to \$79</td> <td><input type="radio"/> \$190 to \$199</td> </tr> <tr> <td><input type="radio"/> \$80 to \$89</td> <td><input type="radio"/> \$200 to \$224</td> </tr> <tr> <td><input type="radio"/> \$90 to \$99</td> <td><input type="radio"/> \$225 to \$249</td> </tr> <tr> <td><input type="radio"/> \$100 to \$109</td> <td><input type="radio"/> \$250 to \$274</td> </tr> <tr> <td><input type="radio"/> \$110 to \$119</td> <td><input type="radio"/> \$275 to \$299</td> </tr> <tr> <td><input type="radio"/> \$120 to \$129</td> <td><input type="radio"/> \$300 to \$349</td> </tr> <tr> <td><input type="radio"/> \$130 to \$139</td> <td><input type="radio"/> \$350 to \$399</td> </tr> <tr> <td><input type="radio"/> \$140 to \$149</td> <td><input type="radio"/> \$400 to \$449</td> </tr> <tr> <td><input type="radio"/> \$150 to \$159</td> <td><input type="radio"/> \$500 or more</td> </tr> </table>		<input type="radio"/> Less than \$50	<input type="radio"/> \$160 to \$169	<input type="radio"/> \$50 to \$59	<input type="radio"/> \$170 to \$179	<input type="radio"/> \$60 to \$69	<input type="radio"/> \$180 to \$189	<input type="radio"/> \$70 to \$79	<input type="radio"/> \$190 to \$199	<input type="radio"/> \$80 to \$89	<input type="radio"/> \$200 to \$224	<input type="radio"/> \$90 to \$99	<input type="radio"/> \$225 to \$249	<input type="radio"/> \$100 to \$109	<input type="radio"/> \$250 to \$274	<input type="radio"/> \$110 to \$119	<input type="radio"/> \$275 to \$299	<input type="radio"/> \$120 to \$129	<input type="radio"/> \$300 to \$349	<input type="radio"/> \$130 to \$139	<input type="radio"/> \$350 to \$399	<input type="radio"/> \$140 to \$149	<input type="radio"/> \$400 to \$449	<input type="radio"/> \$150 to \$159	<input type="radio"/> \$500 or more
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<input type="radio"/> \$150 to \$159	<input type="radio"/> \$500 or more																										
FOR CENSUS USE ONLY																											
A4. Block number	A6. Serial number	B. Type of unit or quarters	C. For vacant units	D. Months vacant	F. Total persons																						
		<u>Occupied</u>	<u>C1. Is this unit for —</u>																								
		<input type="radio"/> First form <input type="radio"/> Continuation	<input type="radio"/> Year round use <input type="radio"/> Seasonal/Mig. — <i>Skip C2, C3, and D.</i>																								
		<u>Vacant</u>	<u>C2. Vacancy status</u>																								
		<input type="radio"/> Regular <input type="radio"/> Usual home elsewhere	<input type="radio"/> For rent <input type="radio"/> For sale only <input type="radio"/> Rented or sold, not occupied <input type="radio"/> Held for occasional use <input type="radio"/> Other vacant																								
		<u>Group quarters</u>	<u>C3. Is this unit boarded up?</u>																								
		<input type="radio"/> First form <input type="radio"/> Continuation	<input type="radio"/> Yes <input type="radio"/> No																								

Appendix 1E. Facsimile of 1980 Census Long-Form Questionnaire

Page 4

ALSO ANSWER THESE QUESTIONS

H13. Which best describes this building? <i>Include all apartments, flats, etc., even if vacant.</i>			
<input type="radio"/> A mobile home or trailer <input type="radio"/> A one-family house detached from any other house <input type="radio"/> A one-family house attached to one or more houses <input type="radio"/> A building for 2 families <input type="radio"/> A building for 3 or 4 families <input type="radio"/> A building for 5 to 9 families <input type="radio"/> A building for 10 to 19 families <input type="radio"/> A building for 20 to 49 families <input type="radio"/> A building for 50 or more families <input type="radio"/> A boat, tent, van, etc. <input checked="" type="checkbox"/>		H21a. Which fuel is used most for house heating? <ul style="list-style-type: none"> <input type="radio"/> Gas: from underground pipes serving the neighborhood <input type="radio"/> Gas: bottled, tank, or LP <input type="radio"/> Electricity <input type="radio"/> Fuel oil, kerosene, etc. <input checked="" type="checkbox"/> <input type="radio"/> Coal or coke <input type="radio"/> Wood <input type="radio"/> Other fuel <input type="radio"/> No fuel used 	
		b. Which fuel is used most for water heating? <ul style="list-style-type: none"> <input type="radio"/> Gas: from underground pipes serving the neighborhood <input type="radio"/> Gas: bottled, tank, or LP <input type="radio"/> Electricity <input type="radio"/> Fuel oil, kerosene, etc. <input checked="" type="checkbox"/> <input type="radio"/> Coal or coke <input type="radio"/> Wood <input type="radio"/> Other fuel <input type="radio"/> No fuel used 	
		c. Which fuel is used most for cooking? <ul style="list-style-type: none"> <input type="radio"/> Gas: from underground pipes serving the neighborhood <input type="radio"/> Gas: bottled, tank, or LP <input type="radio"/> Electricity <input type="radio"/> Fuel oil, kerosene, etc. <input checked="" type="checkbox"/> <input type="radio"/> Coal or coke <input type="radio"/> Wood <input type="radio"/> Other fuel <input type="radio"/> No fuel used 	
H14a. How many stories (floors) are in this building? <i>Count an attic or basement as a story if it has any finished rooms for living purposes.</i>		<input type="radio"/> 1 to 3 — <i>Skip to H15</i> <input type="radio"/> 7 to 12 <input type="radio"/> 4 to 6 <input type="radio"/> 13 or more stories	
b. Is there a passenger elevator in this building?		<input type="radio"/> Yes <input type="radio"/> No	
H15a. Is this building —		<input type="radio"/> On a city or suburban lot, or on a place of less than 1 acre? — <i>Skip to H16</i> <input type="radio"/> On a place of 1 to 9 acres? <input type="radio"/> On a place of 10 or more acres?	
b. Last year, 1979, did sales of crops, livestock, and other farm products from this place amount to —		<input type="radio"/> Less than \$50 (or None) <input type="radio"/> \$250 to \$599 <input type="radio"/> \$1,000 to \$2,499 <input type="radio"/> \$50 to \$249 <input type="radio"/> \$600 to \$999 <input type="radio"/> \$2,500 or more <input checked="" type="checkbox"/>	
H16. Do you get water from —		<input type="radio"/> A public system (<i>city water department, etc.</i>) or private company? <input type="radio"/> An individual drilled well? <input type="radio"/> An individual dug well? <input type="radio"/> Some other source (<i>a spring, creek, river, cistern, etc.</i>)?	
H17. Is this building connected to a public sewer?		<input type="radio"/> Yes, connected to public sewer <input type="radio"/> No, connected to septic tank or cesspool <input type="radio"/> No, use other means	
H18. About when was this building originally built? Mark when the building was first constructed, not when it was remodeled, added to, or converted.		<input type="radio"/> 1979 or 1980 <input type="radio"/> 1960 to 1969 <input type="radio"/> 1940 to 1949 <input type="radio"/> 1975 to 1978 <input type="radio"/> 1950 to 1959 <input type="radio"/> 1939 or earlier <input type="radio"/> 1970 to 1974 <input checked="" type="checkbox"/>	
H19. When did the person listed in column 1 move into this house (or apartment)?		<input type="radio"/> 1979 or 1980 <input type="radio"/> 1950 to 1959 <input type="radio"/> 1975 to 1978 <input type="radio"/> 1949 or earlier <input type="radio"/> 1970 to 1974 <input type="radio"/> Always lived here <input type="radio"/> 1960 to 1969	
H20. How are your living quarters heated? <i>Fill one circle for the kind of heat used most.</i>		<input type="radio"/> Steam or hot water system <input type="radio"/> Central warm-air furnace with ducts to the individual rooms <i>(Do not count electric heat pumps here)</i> <input type="radio"/> Electric heat pump <input type="radio"/> Other built-in electric units (<i>permanently installed in wall, ceiling, or baseboard</i>) <input checked="" type="checkbox"/> <input type="radio"/> Floor, wall, or pipeless furnace <input type="radio"/> Room heaters <u>with</u> flue or vent, burning gas, oil, or kerosene <input type="radio"/> Room heaters <u>without</u> flue or vent, burning gas, oil, or kerosene (<i>not portable</i>) <input type="radio"/> Fireplaces, stoves, or portable room heaters of any kind <input type="radio"/> No heating equipment	
H21b. What is the value of your home? <i>Estimate the value of your home. If you do not know the value, estimate it.</i>		<input type="radio"/> \$0 to \$4,999 <input type="radio"/> \$5,000 to \$9,999 <input type="radio"/> \$10,000 to \$14,999 <input type="radio"/> \$15,000 to \$19,999 <input type="radio"/> \$20,000 to \$24,999 <input type="radio"/> \$25,000 or more <input checked="" type="checkbox"/>	
H22. What are the costs of utilities and fuels for your living quarters?		a. Electricity \$ <input type="text" value=".00"/> OR <input type="radio"/> Included in rent or no charge <i>Average monthly cost</i> b. Gas \$ <input type="text" value=".00"/> OR <input type="radio"/> Included in rent or no charge <i>Average monthly cost</i> c. Water \$ <input type="text" value=".00"/> OR <input type="radio"/> Included in rent or no charge <i>Yearly cost</i> d. Oil, coal, kerosene, wood, etc. \$ <input type="text" value=".00"/> OR <input type="radio"/> Included in rent or no charge <i>Yearly cost</i>	
H23. Do you have complete kitchen facilities? <i>Complete kitchen facilities are a sink with piped water, a range or cookstove, and a refrigerator.</i>		<input type="radio"/> Yes <input checked="" type="checkbox"/> <input type="radio"/> No	
H24. How many bedrooms do you have? <i>Count rooms used mainly for sleeping even if used also for other purposes.</i>		<input type="radio"/> No bedroom <input type="radio"/> 2 bedrooms <input type="radio"/> 4 bedrooms <input type="radio"/> 1 bedroom <input type="radio"/> 3 bedrooms <input type="radio"/> 5 or more bedrooms	
H25. How many bathrooms do you have? <i>A complete bathroom is a room with flush toilet, bathtub or shower, and wash basin with piped water.</i> <i>A half bathroom has at least a flush toilet or bathtub or shower, but does not have all the facilities for a complete bathroom.</i>		<input type="radio"/> No bathroom, or only a half bathroom <input type="radio"/> 1 complete bathroom <input type="radio"/> 1 complete bathroom, plus half bath(s) <input type="radio"/> 2 or more complete bathrooms	
H26. Do you have a telephone in your living quarters?		<input type="radio"/> Yes <input checked="" type="checkbox"/> <input type="radio"/> No <input checked="" type="checkbox"/>	
H27. Do you have air conditioning?		<input type="radio"/> Yes, a central air-conditioning system <input type="radio"/> Yes, 1 individual room unit <input type="radio"/> Yes, 2 or more individual room units <input type="radio"/> No	
H28. How many automobiles are kept at home for use by members of your household?		<input type="radio"/> None <input checked="" type="checkbox"/> <input type="radio"/> 2 automobiles <input checked="" type="checkbox"/> <input type="radio"/> 1 automobile <input type="radio"/> 3 or more automobiles	
H29. How many vans or trucks of one-ton capacity or less are kept at home for use by members of your household?		<input type="radio"/> None <input type="radio"/> 2 vans or trucks <input type="radio"/> 1 van or truck <input type="radio"/> 3 or more vans or trucks	

Appendix 1E. Facsimile of 1980 Census Long-Form Questionnaire

FOR YOUR HOUSEHOLD

Page 5

Please answer H30-H32 if you live in a one-family house which you own or are buying, unless this is —

- A mobile home or trailer
- A house on 10 or more acres
- A condominium unit
- A house with a commercial establishment or medical office on the property

If any of these, or if you rent your unit or this is a multi-family structure, skip H30 to H32 and turn to page 6.

H30. What were the real estate taxes on this property last year?

\$.00 OR None

H31. What is the annual premium for fire and hazard insurance on this property?

\$.00 OR None

H32a. Do you have a mortgage, deed of trust, contract to purchase, or similar debt on this property?

- Yes, mortgage, deed of trust, or similar debt
- Yes, contract to purchase
- No — Skip to page 6

b. Do you have a second or junior mortgage on this property?

- Yes
- No

c. How much is your total regular monthly payment to the lender?

Also include payments on a contract to purchase and to lenders holding second or junior mortgages on this property.

\$.00 OR No regular payment required — Skip to page 6

d. Does your regular monthly payment (amount entered in H32c) include payments for real estate taxes on this property?

- Yes, taxes included in payment
- No, taxes paid separately or taxes not required

e. Does your regular monthly payment (amount entered in H32c) include payments for fire and hazard insurance on this property?

- Yes, insurance included in payment
- No, insurance paid separately or no insurance

Please turn to page 6

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(1)	2. <input type="checkbox"/>	4. <input type="checkbox"/>	(2)	2. <input type="checkbox"/>	4. <input type="checkbox"/>	(3)	2. <input type="checkbox"/>	4. <input type="checkbox"/>
S.S.	0 0	0 0 0	S.S.	0 0	0 0 0	S.S.	0 0	0 0 0
I I	I I I	I I I	I I	I I I	I I I	I I	I I I	I I I
2 2	2 2 2	2 2 2	2 2	2 2 2	2 2 2	2 2	2 2 2	2 2 2
Yes	3 3	3 3 3	Yes	3 3	3 3 3	Yes	3 3	3 3 3
O	4 4	4 4 4	O	4 4	4 4 4	O	4 4	4 4 4
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Appendix 1E. Facsimile of 1980 Census Long-Form Questionnaire

Page 6

Name of Person 1 on page 2: Last name First name Middle initial		
11. In what State or foreign country was this person born? <i>Print the State where this person's mother was living when this person was born. Do not give the location of the hospital unless the mother's home and the hospital were in the same State.</i>		
Name of State or foreign country; or Puerto Rico, Guam, etc.		
12. If this person was born in a foreign country — a. Is this person a naturalized citizen of the United States? <input type="radio"/> Yes, a naturalized citizen <input type="radio"/> No, not a citizen <input type="radio"/> Born abroad of American parents		
b. When did this person come to the United States to stay? <input type="radio"/> 1975 to 1980 <input type="radio"/> 1965 to 1969 <input type="radio"/> 1950 to 1959 <input type="radio"/> 1970 to 1974 <input type="radio"/> 1960 to 1964 <input type="radio"/> Before 1950		
13a. Does this person speak a language other than English at home? <input type="radio"/> Yes <input type="radio"/> No, only speaks English — Skip to 14		
b. What is this language? <i>(For example - Chinese, Italian, Spanish, etc.)</i>		
c. How well does this person speak English? <input type="radio"/> Very well <input type="radio"/> Not well <input type="radio"/> Well <input type="radio"/> Not at all		
14. What is this person's ancestry? If uncertain about how to report ancestry, see instruction guide. <i>(For example: Afro-Amer., English, French, German, Honduran, Hungarian, Irish, Italian, Jamaican, Korean, Lebanese, Mexican, Nigerian, Polish, Ukrainian, Venezuelan, etc.)</i>		
15a. Did this person live in this house five years ago (April 1, 1975)? <i>If in college or Armed Forces in April 1975, report place of residence there.</i> <input type="radio"/> Born April 1975 or later — Turn to next page for next person <input type="radio"/> Yes, this house — Skip to 16 <input type="radio"/> No, different house		
b. Where did this person live five years ago (April 1, 1975)? (1) State, foreign country. Puerto Rico, Guam, etc.: _____		
(2) County: _____		
(3) City, town, village, etc.: _____		
(4) Inside the incorporated (legal) limits of that city, town, village, etc.? <input type="radio"/> Yes <input type="radio"/> No, in unincorporated area		

ANSWER THESE QUESTIONS FOR

16. When was this person born? <input type="radio"/> Born before April 1965 — Please go on with questions 17-33 <input type="radio"/> Born April 1965 or later — Turn to next page for next person								
17. In April 1975 (five years ago) was this person — a. On active duty in the Armed Forces? <input type="radio"/> Yes <input type="radio"/> No								
b. Attending college? <input type="radio"/> Yes <input type="radio"/> No								
c. Working at a job or business? <input type="radio"/> Yes, full time <input type="radio"/> No <input type="radio"/> Yes, part time								
18a. Is this person a veteran of active-duty military service in the Armed Forces of the United States? <i>If service was in National Guard or Reserves only, see Instruction guide.</i> <input type="radio"/> Yes <input type="radio"/> No — Skip to 19								
b. Was active-duty military service during — <i>Fill a circle for each period in which this person served.</i> <input type="radio"/> May 1975 or later <input type="radio"/> Vietnam era (August 1964–April 1975) <input type="radio"/> February 1955–July 1964 <input type="radio"/> Korean conflict (June 1950–January 1955) <input type="radio"/> World War II (September 1940–July 1947) <input type="radio"/> World War I (April 1917–November 1918) <input type="radio"/> Any other time								
19. Does this person have a physical, mental, or other health condition which has lasted for 6 or more months and which . . . a. Limits the kind or amount of work this person can do at a job? <input type="radio"/> Yes <input type="radio"/> No b. Prevents this person from working at a job? <input type="radio"/> Yes <input type="radio"/> No c. Limits or prevents this person from using public transportation? <input type="radio"/> Yes <input type="radio"/> No								
20. If this person is a female — None 1 2 3 4 5 6 How many babies has she ever had, not counting stillbirths? <input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 Do not count her stepchildren or children she has adopted. 7 8 9 10 11 12 or more								
21. If this person has ever been married — a. Has this person been married more than once? <input type="radio"/> Once <input type="radio"/> More than once								
b. Month and year of marriage? Month and year of first marriage? (Month) (Year) (Month) (Year)								
c. If married more than once — Did the first marriage end because of the death of the husband (or wife)? <input type="radio"/> Yes <input type="radio"/> No								
FOR CENSUS USE ONLY								
Per. No.	11. <input type="checkbox"/>	13b. <input type="checkbox"/>	14. <input type="checkbox"/>	15b. <input type="checkbox"/>	23. <input type="checkbox"/>	VL <input type="checkbox"/>	24a. <input type="checkbox"/>	
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Appendix 1E. Facsimile of 1980 Census Long-Form Questionnaire

PERSON 1 ON PAGE 2

										Page 7																					
<p>c. When going to work <u>last week</u>, did this person usually —</p> <p><input type="radio"/> Drive alone — Skip to 28 <input type="radio"/> Drive others only <input type="radio"/> Share driving <input type="radio"/> Ride as passenger only</p> <p>d. How many people, including this person, usually rode to work in the car, truck, or van <u>last week</u>?</p> <p><input type="radio"/> 2 <input checked="" type="checkbox"/> 4 <input type="radio"/> 6 <input type="radio"/> 3 <input type="radio"/> 5 <input type="radio"/> 7 or more <input checked="" type="checkbox"/></p> <p><i>After answering 24d, skip to 28.</i></p> <p>25. Was this person <u>temporarily absent</u> or on <u>layoff</u> from a job or business <u>last week</u>?</p> <p><input type="radio"/> Yes, on layoff <input type="radio"/> Yes, on vacation, temporary illness, labor dispute, etc. <input type="radio"/> No</p>										<p>CENSUS USE ONLY</p> <p>31a. Last year (1979), did this person work, even for a few days, at a paid job or in a business or farm?</p> <p><input type="radio"/> Yes <input checked="" type="checkbox"/> No — Skip to 31d</p>																					
<p>31b. 31c. 31d.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>○ ○</td><td>○ ○</td><td>○ ○</td></tr> <tr><td>I I</td><td>I I</td><td>I I</td></tr> <tr><td>2 2</td><td>2 2</td><td>2 2</td></tr> <tr><td>3 3</td><td>3 3</td><td>3 3</td></tr> <tr><td>4 4</td><td>4 4</td><td>4 4</td></tr> <tr><td>5 5</td><td>5 5</td><td>5 5</td></tr> <tr><td>6 6</td><td>6 6</td><td>6</td></tr> <tr><td>7 7</td><td>7 7</td><td>7</td></tr> <tr><td>8 8</td><td>8 8</td><td>8</td></tr> <tr><td>9 9</td><td>9 9</td><td>9</td></tr> </table>		○ ○	○ ○	○ ○	I I	I I	I I	2 2	2 2			2 2	3 3	3 3	3 3	4 4	4 4	4 4	5 5	5 5	5 5	6 6	6 6	6	7 7	7 7	7	8 8	8 8	8	9 9
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<p>26a. Has this person been looking for work during the last 4 weeks?</p> <p><input checked="" type="checkbox"/> Yes <input type="radio"/> No — Skip to 27</p> <p>b. Could this person have taken a job <u>last week</u>?</p> <p><input type="radio"/> No, already has a job <input checked="" type="checkbox"/> <input type="radio"/> No, temporarily ill <input type="radio"/> No, other reasons (<i>In school, etc.</i>) <input checked="" type="checkbox"/> <input type="radio"/> Yes, could have taken a job</p>										<p>31a. Last year (1979), did this person work, even for a few days, at a paid job or in a business or farm?</p> <p><input type="radio"/> Yes <input checked="" type="checkbox"/> No — Skip to 31d</p> <p>b. How many weeks did this person work in 1979? <i>Count paid vacation, paid sick leave, and military service.</i></p> <p>Weeks</p>																					
<p>31b. 31c. 31d.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>○ ○</td><td>○ ○</td><td>○ ○</td></tr> <tr><td>I I</td><td>I I</td><td>I I</td></tr> <tr><td>2 2</td><td>2 2</td><td>2 2</td></tr> <tr><td>3 3</td><td>3 3</td><td>3 3</td></tr> <tr><td>4 4</td><td>4 4</td><td>4 4</td></tr> <tr><td>5 5</td><td>5 5</td><td>5 5</td></tr> <tr><td>6 6</td><td>6 6</td><td>6</td></tr> <tr><td>7 7</td><td>7 7</td><td>7</td></tr> <tr><td>8 8</td><td>8 8</td><td>8</td></tr> <tr><td>9 9</td><td>9 9</td><td>9</td></tr> </table>		○ ○	○ ○	○ ○	I I	I I	I I	2 2	2 2			2 2	3 3	3 3	3 3	4 4	4 4	4 4	5 5	5 5	5 5	6 6	6 6	6	7 7	7 7	7	8 8	8 8	8	9 9
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<p>27. When did this person last work, even for a few days?</p> <p><input type="radio"/> 1980 <input type="radio"/> 1978 <input type="radio"/> 1970 to 1974 <input type="radio"/> 1979 <input type="radio"/> 1975 to 1977 <input type="radio"/> 1969 or earlier <input type="radio"/> Never worked Skip to 31d</p>										<p>c. During the weeks worked in 1979, how many hours did this person usually work each week?</p> <p>Hours</p>																					
<p>32a. 32b.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>○ ○ ○ ○</td><td>○ ○ ○ ○</td></tr> <tr><td>I I I I</td><td>I I I I</td></tr> <tr><td>2 2 2 2</td><td>2 2 2 2</td></tr> <tr><td>3 3 3 3</td><td>3 3 3 3</td></tr> <tr><td>4 4 4 4</td><td>4 4 4 4</td></tr> <tr><td>5 5 5 5</td><td>5 5 5 5</td></tr> <tr><td>6 6 6 6</td><td>6 6 6 6</td></tr> <tr><td>7 7 7 7</td><td>7 7 7 7</td></tr> <tr><td>8 8 8 8</td><td>8 8 8 8</td></tr> <tr><td>9 9 9 9</td><td>9 9 9 9</td></tr> <tr><td>A O</td><td>O A O</td></tr> </table>		○ ○ ○ ○	○ ○ ○ ○	I I I I	I I I I	2 2 2 2	2 2 2 2	3 3 3 3	3 3 3 3			4 4 4 4	4 4 4 4	5 5 5 5	5 5 5 5	6 6 6 6	6 6 6 6	7 7 7 7	7 7 7 7	8 8 8 8	8 8 8 8	9 9 9 9	9 9 9 9	A O	O A O						
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<p>28—30. Current or most recent job activity</p> <p>Describe clearly this person's chief job activity or business <u>last week</u>. If this person had more than one job, describe the one at which this person worked the most hours. If this person had no job or business <u>last week</u>, give information for last job or business since 1975.</p>										<p>32. Income in 1979 —</p> <p><i>Fill circles and print dollar amounts.</i> <i>If net income was a loss, write "Loss" above the dollar amount.</i> <i>If exact amount is not known, give best estimate. For income received jointly by household members, see Instruction guide.</i></p>																					
<p>32c. 32d.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>○ ○ ○ ○</td><td>○ ○ ○ ○</td></tr> <tr><td>I I I I</td><td>I I I I</td></tr> <tr><td>2 2 2 2</td><td>2 2 2 2</td></tr> <tr><td>3 3 3 3</td><td>3 3 3 3</td></tr> <tr><td>4 4 4 4</td><td>4 4 4 4</td></tr> <tr><td>5 5 5 5</td><td>5 5 5 5</td></tr> <tr><td>6 6 6 6</td><td>6 6 6 6</td></tr> <tr><td>7 7 7 7</td><td>7 7 7 7</td></tr> <tr><td>8 8 8 8</td><td>8 8 8 8</td></tr> <tr><td>9 9 9 9</td><td>9 9 9 9</td></tr> <tr><td>O A O</td><td>O A O</td></tr> </table>		○ ○ ○ ○	○ ○ ○ ○	I I I I	I I I I	2 2 2 2	2 2 2 2	3 3 3 3	3 3 3 3			4 4 4 4	4 4 4 4	5 5 5 5	5 5 5 5	6 6 6 6	6 6 6 6	7 7 7 7	7 7 7 7	8 8 8 8	8 8 8 8	9 9 9 9	9 9 9 9	O A O	O A O						
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<p>a. For whom did this person work? If now on active duty in the Armed Forces, print "AF" and skip to question 31.</p> <p>(Name of company, business, organization, or other employer)</p> <p>b. What kind of business or industry was this? <i>Describe the activity at location where employed.</i></p> <p>(For example: Hospital, newspaper publishing, mail order house, auto engine manufacturing, breakfast cereal manufacturing) <input checked="" type="checkbox"/></p> <p>c. Is this mainly — (Fill one circle)</p> <p><input type="radio"/> Manufacturing <input checked="" type="checkbox"/> Retail trade <input type="radio"/> Wholesale trade <input type="radio"/> Other — (agriculture, construction, service, government, etc.)</p>										<p>During 1979 did this person receive any income from the following sources?</p> <p>If "Yes" to any of the sources below — How much did this person receive for the entire year?</p> <p>a. Wages, salary, commissions, bonuses, or tips from all jobs . . . Report amount before deductions for taxes, bonds, dues, or other items.</p> <p><input type="radio"/> Yes → \$.00 <input type="radio"/> No (Annual amount — Dollars)</p> <p>b. Own nonfarm business, partnership, or professional practice . . . Report net income after business expenses.</p> <p><input checked="" type="checkbox"/> Yes → \$.00 <input type="radio"/> No (Annual amount — Dollars)</p> <p>c. Own farm . . . Report net income after operating expenses. Include earnings as a tenant farmer or sharecropper.</p> <p><input type="radio"/> Yes → \$.00 <input type="radio"/> No (Annual amount — Dollars)</p> <p>d. Interest, dividends, royalties, or net rental income . . . Report even small amounts credited to an account.</p> <p><input type="radio"/> Yes → \$.00 <input type="radio"/> No (Annual amount — Dollars)</p> <p>e. Social Security or Railroad Retirement . . .</p> <p><input checked="" type="checkbox"/> Yes → \$.00 <input type="radio"/> No (Annual amount — Dollars)</p>																					
<p>32e. 32f.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>○ ○ ○ ○</td><td>○ ○ ○ ○</td></tr> <tr><td>I I I I</td><td>I I I I</td></tr> <tr><td>2 2 2 2</td><td>2 2 2 2</td></tr> <tr><td>3 3 3 3</td><td>3 3 3 3</td></tr> <tr><td>4 4 4 4</td><td>4 4 4 4</td></tr> <tr><td>5 5 5 5</td><td>5 5 5 5</td></tr> <tr><td>6 6 6 6</td><td>6 6 6 6</td></tr> <tr><td>7 7 7 7</td><td>7 7 7 7</td></tr> <tr><td>8 8 8 8</td><td>8 8 8 8</td></tr> <tr><td>9 9 9 9</td><td>9 9 9 9</td></tr> <tr><td>O A O</td><td>O A O</td></tr> </table>		○ ○ ○ ○	○ ○ ○ ○	I I I I	I I I I	2 2 2 2	2 2 2 2	3 3 3 3	3 3 3 3			4 4 4 4	4 4 4 4	5 5 5 5	5 5 5 5	6 6 6 6	6 6 6 6	7 7 7 7	7 7 7 7	8 8 8 8	8 8 8 8	9 9 9 9	9 9 9 9	O A O	O A O						
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<p>29. Occupation</p> <p>a. What kind of work was this person doing?</p> <p>(For example: Registered nurse, personnel manager, supervisor of order department, gasoline engine assembler, grinder operator)</p> <p>b. What were this person's most important activities or duties?</p> <p>(For example: Patient care, directing hiring policies, supervising order clerks, assembling engines, operating grinding mill)</p>										<p>f. Supplemental Security (SSI), Aid to Families with Dependent Children (AFDC), or other public assistance or public welfare payments . . .</p> <p><input type="radio"/> Yes → \$.00 <input type="radio"/> No (Annual amount — Dollars)</p> <p>g. Unemployment compensation, veterans' payments, pensions, alimony or child support, or any other sources of income received regularly . . .</p> <p><i>Exclude lump-sum payments such as money from an inheritance or the sale of a home.</i></p> <p><input checked="" type="checkbox"/> Yes → \$.00 <input type="radio"/> No (Annual amount — Dollars)</p>																					
<p>32g. 33.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>○ ○ ○ ○</td><td>○ ○ ○ ○</td></tr> <tr><td>I I I I</td><td>I I I I</td></tr> <tr><td>2 2 2 2</td><td>2 2 2 2</td></tr> <tr><td>3 3 3 3</td><td>3 3 3 3</td></tr> <tr><td>4 4 4 4</td><td>4 4 4 4</td></tr> <tr><td>5 5 5 5</td><td>5 5 5 5</td></tr> <tr><td>6 6 6 6</td><td>6 6 6 6</td></tr> <tr><td>7 7 7 7</td><td>7 7 7 7</td></tr> <tr><td>8 8 8 8</td><td>8 8 8 8</td></tr> <tr><td>9 9 9 9</td><td>9 9 9 9</td></tr> <tr><td>O A O</td><td>O A O</td></tr> </table>		○ ○ ○ ○	○ ○ ○ ○	I I I I	I I I I	2 2 2 2	2 2 2 2	3 3 3 3	3 3 3 3			4 4 4 4	4 4 4 4	5 5 5 5	5 5 5 5	6 6 6 6	6 6 6 6	7 7 7 7	7 7 7 7	8 8 8 8	8 8 8 8	9 9 9 9	9 9 9 9	O A O	O A O						
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<p>30. Was this person — (Fill one circle)</p> <p>Employee of private company, business, or individual, for wages, salary, or commissions . . . <input checked="" type="checkbox"/></p> <p>Federal government employee . . . <input type="radio"/></p> <p>State government employee . . . <input type="radio"/></p> <p>Local government employee (city, county, etc.) . . . <input type="radio"/></p> <p>Self-employed in own business, professional practice, or farm — Own business not incorporated . . . <input type="radio"/> Own business incorporated . . . <input type="radio"/></p> <p>Working without pay in family business or farm . . . <input type="radio"/></p>										<p>33. What was this person's total income in 1979?</p> <p>Add entries in questions 32a through g; subtract any losses. \$.00 <i>If total amount was a loss, write "Loss" above amount.</i></p> <p>OR None (Annual amount — Dollars)</p>																					
<p>32h. 32i.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>○ ○ ○ ○</td><td>○ ○ ○ ○</td></tr> <tr><td>I I I I</td><td>I I I I</td></tr> <tr><td>2 2 2 2</td><td>2 2 2 2</td></tr> <tr><td>3 3 3 3</td><td>3 3 3 3</td></tr> <tr><td>4 4 4 4</td><td>4 4 4 4</td></tr> <tr><td>5 5 5 5</td><td>5 5 5 5</td></tr> <tr><td>6 6 6 6</td><td>6 6 6 6</td></tr> <tr><td>7 7 7 7</td><td>7 7 7 7</td></tr> <tr><td>8 8 8 8</td><td>8 8 8 8</td></tr> <tr><td>9 9 9 9</td><td>9 9 9 9</td></tr> <tr><td>O A O</td><td>O A O</td></tr> </table>		○ ○ ○ ○	○ ○ ○ ○	I I I I	I I I I	2 2 2 2	2 2 2 2	3 3 3 3	3 3 3 3			4 4 4 4	4 4 4 4	5 5 5 5	5 5 5 5	6 6 6 6	6 6 6 6	7 7 7 7	7 7 7 7	8 8 8 8	8 8 8 8	9 9 9 9	9 9 9 9	O A O	O A O						
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Please turn to the next page and answer the questions for Person 2 on page 2

Appendix 1E. Facsimile of 1980 Census Long-Form Questionnaire

Page 20

Please Make Sure You Have Filled This Form Completely

For persons who answered in Question 1 that they are staying here only temporarily and have a usual home elsewhere, enter the address of usual home here:		
House number	Street or road	Apartment number or location
City	County	
State	ZIP Code	
For Answers to Questions H1, H2, and H3:		
H1. Name of person(s) left out and reason:		

H2. Name of person(s) away from home and reason away:		

H3. Name of visitor(s) for whom there is no one at the home address to report the person to a Census Taker:		

NOTE

If you have listed more than 7 persons in Question 1, please make sure that you have filled the form for the first 7 people. Then mail back this form. A Census Taker will call to obtain the information for the other people.

1 Check to be certain you have:

- Answered Question 1 on page 1.
- Answered Questions 2 through 10 for each person you listed at the top of pages 2 and 3.
- Answered Questions H1 through H32 on pages 3, 4, and 5.
- Filled a pair of pages for each person listed on pages 2 and 3. That is, pages 6 and 7 should be filled for the Person in column 1; pages 8 and 9 for the Person in column 2, etc.

Please notice we need answers to questions 17 through 33 for every person born before April 1965 even though they may not seem to apply to the particular person.

For example, you may have forgotten to fill all the necessary circles on work or on income for a teenager going to school, or a retired person. To avoid our having to check with you to make sure of the answer, please be certain you have given all the necessary answers.

2 Write here the name of the person who filled the form, the date the form was completed, and the telephone number on which the people in this household can be called.

Name _____

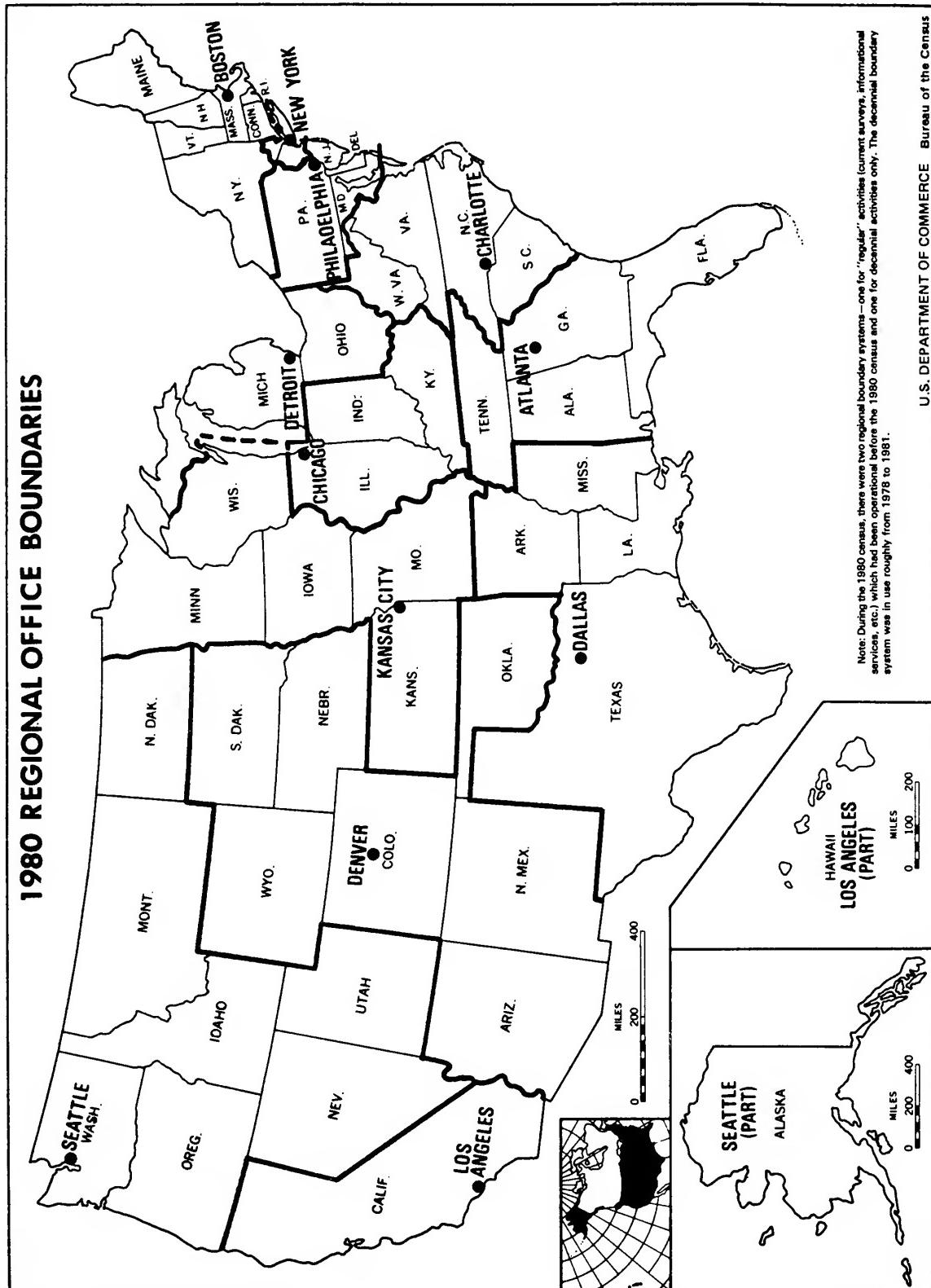
Date _____

Telephone Number _____

3 Then fold the form the way it was sent to you. Mail it back in the enclosed envelope. The address of the U.S. Census Office appears on the front cover of this questionnaire. Please be sure that before you seal the envelope the address shows through the window. No stamp is required.

Thank you very much.

Appendix 1F. 1980 Census Regional Office Boundaries



Appendix 1G. Relation of Selected Printed Reports to Summary Tape Files

Printed report	Source
PHC80-1, Block Statistics (Microfiche)	STF 1B
PHC80-2, Census Tracts	STF's 2A, 4A
PHC80-3, Summary Characteristics for Governmental Units and SMSA's	STF's 1A, 3A
PHC80-4, Congressional Districts of the 98th Congress	STF's 1D, 3D
PC80-1-A, Number of Inhabitants	STF 1A
PC80-1-B, General Population Characteristics	STF 2B
PC80-1-C, General Social and Economic Characteristics	STF 4B
PC80-1-D, Detailed Population Characteristics	STF 5
HC80-1-A, General Housing Characteristics	STF 2B
HC80-1-B, Detailed Housing Characteristics	STF 4B
HC80-2, Metropolitan Housing Characteristics	STF 5

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(Page numbers here omit the chapter prefix, 2-, which appears as part of the number of individual pages and appendixes.
Each chapter is paginated separately for convenience of issue)

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Chapter 2. Planning the Census

INTRODUCTION

Planning for the 1980 census began while the last phases of the 1970 census were still underway, and funding for formal planning started with the beginning of fiscal year 1974, in July 1973. The planning process included a critique of the experiences in the 1970 census, internal Bureau task forces that investigated proposals for 1980, congressional review, consultation and contacts with data users, and a series of procedures and content tests.

This chapter will focus on the latter two components of planning—the extensive contacts with data users and the 1980 census pretests. The evaluation of 1970 census experiences was discussed in the PHC(E) series of reports from the 1970 census.¹ The chapter in this publication on litigation and legislation includes a description of the congressional review process as it related to the 1980 census.

Planning had to begin several years prior to 1980 to allow sufficient time to collect and review recommendations about how to conduct the census and to test both the census questions and procedures prior to implementing the census plan. Several key deadlines had to be met. For instance, the Bureau was obliged to inform Congress of the general subject items to be asked 3 years before, and the specific content items 2 years before, Census Day (Apr. 1, 1980). A final dress rehearsal of census content and procedures needed to be conducted 2 years before Census Day to allow time to make adjustments and to begin early census activities. Major preparatory operations—compiling addresses and printing questionnaires—had to begin in early 1979, over a year before Census Day.

CONSULTATION AND CONTACTS WITH DATA USERS

In planning the 1980 Census of Population and Housing, the Census Bureau made numerous contacts and consulted a broad spectrum of data users. The major programs for informing data users and gathering recommendations from them are described below. Participants in local public meetings held throughout the country were asked to suggest improvements for the 1980 count. Meetings were held with State planning agency officials to get their views. Representatives of more than 90 Federal agencies were brought together to outline Federal data needs, to provide ideas on census content, and to review other matters related to the census. Several census advisory committees, including three representing minority populations, gave advice on all aspects and phases of the census. Regional meetings held with American

Indian, Eskimo, and Aleut groups were a forum for the exchange of ideas on how best to count Native Americans. A panel of the National Academy of Sciences/National Research Council reviewed census plans and made recommendations. Components of the Bureau's Minority Statistics Program made extensive contacts with national and community minority organizations to inform these groups of 1980 census plans and to gather comments.

It should be noted that there were numerous other formal and informal contacts with data users over the entire decennial census period that did not fall under the programs discussed here, but which contributed greatly to gathering suggestions on, and imparting knowledge about, the census.

Local Public Meetings

Local public meetings were held in 73 cities, covering every State and the District of Columbia, between October 1974 and July 1975 to give knowledgeable data users and the interested public an opportunity to comment on the 1970 census and to make suggestions for the 1980 census. The Bureau discussed the prospect of such meetings with the national organizations of the U.S. Chamber of Commerce, the American Statistical Association, and the American Marketing Association, and asked that they sound out their local chapters on the possibility of sponsoring the meetings. In addition, a national press release was issued in October 1974 inviting other local groups to organize conferences. Local chambers of commerce, chapters of professional associations, councils of government, business and university groups, regional offices of the Department of Commerce and the Bureau of the Census, and field offices of the Domestic and International Business Administration (now the International Trade Administration, in the Department of Commerce), among others, promoted and sponsored sessions.

Bureau staff worked closely with the organizers and agenda were prepared jointly. In most cases, the local sponsors were asked to provide a location for the meeting, select a chairperson, handle registration, and generate publicity in both the print and broadcast media, though Bureau staff sometimes contacted local media. In all, some 6,000 individuals participated in these meetings, with nearly half representing State and local governments; the remainder came from academic institutions and the private sector. Representatives from the Census Bureau attended each session to describe the status of 1980 census planning to answer questions, to collect comments, criticisms, and suggestions, and to distribute forms so that attendees or other interested people could mail in comments later.

Participants made recommendations on precensus activities, the relationship between the Bureau and local communities, data

¹U.S. Bureau of the Census. *Evaluation and Research Program of the 1970 Census of Population and Housing. PHC(E).* Washington, DC, 1973-79.

Chapter 2. Planning the Census

collection and enumeration procedures, questionnaire materials and design, subject content, tabulations, data dissemination, user services, and geographic areas. Their input was important in planning the census. Recommendations to obtain data on disabilities were frequent, as were requests for more small-area data, the coordination of census content with the data demands of Federal agencies, and the earlier release of all census data products. (See app. 2A for a list of these meetings.)

Professional Associations

From November 1974 to June 1976, the Bureau conducted 23 conferences at the gatherings of national professional associations. (See app. 2A for a list of these meetings.) The purpose of the meetings was to augment the local public meeting program by giving members of these associations an overview of plans for the 1980 census and an opportunity for their members to ask questions about or make recommendations on the census. Bureau personnel were present at each meeting to conduct workshops, which generally consisted of short introductory presentations followed by time for audience comments and recommendations.

State Agency Meetings

In February 1974, the Director of the Census Bureau wrote the Governor and top planning official in each of the 50 States and officials in the District of Columbia, asking for their comments and suggestions on plans for the 1980 census. Beginning in November 1974 and continuing through December 1975, 16 regional meetings were held throughout the country between State representatives and Bureau personnel to review the States' recommendations. (See app. 2A for a list of these meetings.)

The State planners made recommendations on precensus activities, community relations, enumeration procedures, subject content and tabulations, data dissemination, geographic areas, suppression of census data for reasons of privacy and confidentiality, and other topics.

Summary Tape Users

In late 1974 and early 1975, the Bureau funded three meetings, one each for academic, governmental, and private-sector users of the 1970 census summary computer tapes and the public-use microdata samples files. The meetings were to obtain recommendations from the primary users of machine-readable census data from 1970 to facilitate the planning for comparable materials from the 1980 census. (See app. 2A for the list of meetings.) A member of each group was invited by the Bureau to organize a meeting. Each gathering was attended by 13 or 14 users and several Bureau personnel. The suggestions and recommendations of the participants covered the areas of technical documentation, technical conventions and physical characteristics of computer tapes, the content and structure of tape files, software, summary tape processing centers, and other topics.

National Mailout

In another effort to solicit the opinions of data users, the Director wrote to the heads of 4,700 national trade and professional associations and labor unions in January 1976, requesting that

they include a notice in their newsletters or other publications asking members to send in any suggestions, questions, or comments relating to plans for the 1980 census.

Reapportionment and Redistricting Meetings

A series of meetings held with appropriate State officials in all 50 States between January and July 1976 arose out of the Bureau's responsibilities under Public Law 94-171, enacted in 1975. This legislation required that the Bureau provide, by April 1, 1981, 1980 census total population counts for small areas to the Governor and officers or public bodies responsible for legislative redistricting in each State. Earlier in the decade the Bureau had undertaken a series of discussions with representatives of the National Conference of State Legislatures, the U.S. Conference of Mayors, and the National League of Cities. These discussions centered around the need for and feasibility of providing census data for election precincts or similar entities.

At the meetings in 1976, each State's needs for reapportionment and redistricting data were discussed. The Bureau described its plans for presenting data by election precincts for States which chose to participate in the Bureau's election precinct program. To get precinct data, the States had to meet certain criteria, including presenting the Bureau with maps on which the precinct boundaries were clearly delineated and followed visible features or municipal limits. (For more information relating to Public Law 94-171, see Ch. 8, "Data Products and Dissemination.")

Federal Agency Council

An important source of input on the content of the 1980 census questionnaire and on other aspects of the census program, including the tabulations, was the Federal Agency Council for Demographic Censuses (originally called the Federal Agency Council on the 1980 Census).² Federal agency councils were organized to help in planning the 1960 and 1970 censuses and in 1974, at the request of the Census Bureau, the Office of Management and Budget (OMB) established the Council for the 1980 census. The Council was chaired by a representative of the OMB's Statistical Policy Division.³

The Federal Agency Council was established to provide an organized means of transmitting to the OMB and to the Census Bureau the comments and advice of Federal agency users of decennial census data and to provide a structure for the Bureau to keep these users informed of its plans and developments for the 1980 census. The attention of the Council was focused on broad aspects of the census, such as proposals for changes in questionnaire content, major changes in procedures or samples, and tabulation and publication plans.

The Council held its first meeting in December 1974. The initial phase of the Council's activities was devoted to questionnaire content. Because of the large size of the Council, it was decided to convene meetings of the entire body infrequently (it

²The name change occurred when the scope of the Council was extended to cover the then proposed 1985 mid-decade census.

³This division was transferred to the Department of Commerce in October 1977 and renamed the Office of Federal Statistical Policy and Standards (OFSPS). The chairmanship passed with it. In 1981, it was transferred back to OMB, and the name changed to the Statistical Policy Branch, but was abolished in 1982 and its functions consolidated into a Regulatory and Statistical Analysis Division.

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held seven meetings through March 1982). Nine subject-area working committees (later 10 when one committee split), bringing together agencies with common areas of interest, were set up to draft proposals for content in the areas of income, the labor force, occupational classification, transportation, education, housing, disability and health (originally one committee, later split in two), race and ethnicity, and general demography. Reports from the subject-area working committees were virtually all completed by late 1975 and the Bureau began discussions with OMB on the committees' proposals at that time.

In addition to the attention given to subject content in the first phase of the Council's work, the member agencies were also asked to submit statements by May 1975 on geographic area requirements. Beginning in 1977, Council members were asked to provide input on tabulations and proposed table outlines of census publications. They were asked to give particular consideration to the data needs of local officials for Federal grant applications and affirmative action programs. (See Key Personnel appendix at the end of this publication series for the list of members of the Federal Agency Council.)

Census Advisory Committees

The Bureau's census advisory committees played an important role in planning for all phases of the decennial census. During the census period, the Bureau had 11 committees that dealt to varying degrees with issues relating to the 1980 census. Members represented community and national organizations, academic institutions, business and professional associations, consumer interests, elected public officials, and the clergy. The function of the committees was to advise the Director on various matters relating to the Census of Population and Housing and other Bureau programs. Representation on the committees changed frequently, and certain members served on more than one body during the decennial census period. (See Key Personnel appendix in this publication series for advisory committee membership lists.) Generally, the committees met twice a year.

The committees advised the Director on data needs, what questions to ask in the census and how to ask them, coverage-improvement procedures, publicity and minority outreach, statistical standards, tabulations and data dissemination, and policy issues such as whether to adjust census counts.

Standing committees—The Census Advisory Committee of the American Statistical Association (ASA) is the oldest standing advisory committee of the Census Bureau. A joint committee of the ASA and the American Economic Association (AEA) was established in 1918 to advise the Director on plans for the 1920 decennial census, and it met regularly from 1919 on. In 1937, however, the Committee was reconstituted so that all of its members were chosen by the ASA, and the AEA was not represented by any particular census advisory committee until 1960, when the Census Advisory Committee of the AEA was established. The Census Advisory Committee of the American Marketing Association was formed in 1946, and the Census Advisory Committee on Population Statistics, in 1965.

1980 census committees—Because of the widespread concern about the undercount of minorities in the 1970 census, three advisory committees, representing different communities, were established.

The Census Advisory Committee on the Black Population for the 1980 Census was established in October 1974, holding its first meeting in February 1975 and its last in October 1980. The Census Advisory Committee on the Spanish Origin Population for the 1980 Census was established in March 1975 and held meetings periodically between July 1975 and October 1980. The Census Advisory Committee on the Asian and Pacific Americans Population for the 1980 Census was established in June 1976 and held its first meeting in August 1976 and its last in October 1980.

The Census Advisory Committee on Housing for the 1980 Census was set up in April 1976. It held its first meeting in November 1976 and its last in November 1980. A similar committee for the 1970 census was created in 1961 and disbanded in 1971, and a housing advisory group for the 1960 census met from 1957 to 1961.

Defunct committees—The Census Advisory Committee on State and Local Statistics was formed in 1976 when two other census advisory committees—on State and local government statistics and on small areas—were merged. The combined committee met twice the year it was established and then was disbanded in a Governmentwide move to reduce the number of public advisory committees. Several of its members were appointed to other census advisory committees.

The Census Advisory Committee on Privacy and Confidentiality was established in 1971, held its first meeting in September 1972, and met periodically until it was dissolved in 1975.

Regional American Indian and Alaska Native Meetings

Based on advice received from the American Indian and Alaska Native community, the Bureau did not request the Secretary of Commerce to establish an advisory committee on the American Indian, Eskimo, and Aleut populations for the 1980 census. Because of the diverse groups within the Indian population and unique local conditions, community representatives felt that another arrangement would be more productive in obtaining input for the census. Therefore, the Census Bureau, with the assistance of American Indian, Eskimo, and Aleut organizations, sought input for the 1980 census through a series of regional meetings held in appropriate locations across the country.

From 1976 to 1980, 14 meetings were held with American Indian and Alaska Native regional groups or their national conferences. The gatherings, most of which were held in 1978, were in various locations across the country: Albuquerque, NM (2); Anchorage, AK; Arlington, VA (2); Bismarck, ND; Boston, MA; Nashville, TN; Oklahoma City, OK; Phoenix, AZ; Sacramento, CA; Spokane, WA; Washington, DC; and Wausau, WI.

At the meetings, census representatives provided an overview of the Bureau's minority programs, information on map usage, descriptions of 1970 census data available from the Census Bureau, in-depth information on the proposed 1980 race question, a review of 1970 census procedures, and the plans to enumerate the American Indian, Eskimo, and Aleut populations in 1980. Time was allotted to receive questions, comments, and recommendations from the participants on these and other subjects. Particular concern was expressed about the following issues: Improving the 1980 census count; administration of a

Chapter 2. Planning the Census

supplementary questionnaire at American Indian households on reservations; use of local enumerators and office staff; the publication of 1980 census data on American Indians, Eskimos, and Aleuts; and the use of official/legal boundaries of reservations in the enumeration.

Summary Tape Processing Center Conferences

Two-day conferences for Summary Tape Processing Center Program representatives were held in Arlington, VA, in November 1977, and in Denver, CO, in December. The Summary Tape Processing Center Program was established by the Census Bureau in 1968 as a clearinghouse or referral service for users needing data processing services. The processing centers were neither franchised, established, nor supported by the Census Bureau, but provided services at their own initiative. In order to emphasize this relationship, the Bureau changed the name of the program in 1981 to National Clearinghouse for Census Data Services.

About 180 participants attended the two conferences. Bureau representatives described the status of 1980 census activities, tentative plans for 1980 products and services, and current statistics available on computer tape. The data users offered their thoughts on new or improved products and services and formulated recommendations.

Four working groups were formed at each conference to facilitate the preparation of recommendations. Two concentrated on tabulation contents, reports, data files, and other data product considerations; another dealt with maps and geographic reference products; and the fourth was concerned with the broad range of user services.

Committee on National Statistics' Panel on Decennial Census Plans

In the fall of 1977, the Secretary of Commerce asked the National Academy of Sciences (NAS)/National Research Council (NRC) to undertake an evaluation of the 1980 census plans, particularly with regard to coverage issues.⁴ In December 1977, the Committee on National Statistics of the NAS/NRC appointed the Panel on Decennial Census Plans. Its 14 members were individuals knowledgeable about statistics, communications, demography, sociology, economics, city planning, and anthropology. Three of the members also served on census advisory committees. (See the Key Personnel appendix in this publication series for the list of members.)

The panel was set up to look into four issues: (1) plans for improving the decennial census, (2) procedures for handling contested counts, (3) the feasibility of adjusting the counts, and (4) plans for evaluating the 1980 census and for designing future censuses. The full panel met three times from January to April 1978, and, in addition, smaller groups of members met separately to consider particular issues. The panel circulated a draft report in the summer of 1978 and issued its final report later that year.⁵

⁴In 1969, the NAS had established the Advisory Committee on Problems of Census Enumeration to conduct a study for the Census Bureau on ways to improve the completeness and accuracy of information collected in the decennial censuses and in intercensal household surveys carried out by the Bureau and other government agencies. The report of that committee, *America's Uncounted People*, was published in 1972.

⁵National Academy of Sciences, *Counting the People in 1980: An Appraisal of Census Plans*. 1978.

The panel made nearly 30 recommendations relating to coverage-improvement procedures, census staffing problems, the public information and community relations programs, the questionnaire and its effect on response, questionnaire items on race and ethnic origin, household composition, plans for local review and procedures for handling contested counts, the possibility of adjusting census counts and population estimates to compensate for underenumeration, and an evaluation of the 1980 census and steps to improve future censuses.

With regard to the issue of adjusting census counts, the panel concluded that inequities resulting from the geographic differentials in the census undercount could be reduced by adjusting the data and that methods of adjustment with tolerable accuracy were feasible. The panel believed that the question of adjustment was a policy decision the Secretary of Commerce should make, but that if counts were to be adjusted, the Bureau ought to determine the procedures and that these should be agreed upon in advance of the census. Furthermore, adjusted counts ought to be used only for the purpose of allocating funds and not for apportioning seats in the House of Representatives.

Workshops and Conference on the Adjustment Issue

In the late summer of 1979, the Bureau continued a series of steps designed to help it reach a decision on whether to adjust 1980 census counts to compensate for underenumeration. Support for adjustment had been voiced by several sources throughout the 1970's and gained momentum with the statement by the Panel on Decennial Census Plans. Although the Bureau had been quite active in conducting research concerning the undercount, the panel called on it to continue to investigate methods for measuring the undercount and for adjusting.

The Bureau convened a census undercount workshop in early September 1979. The workshop participants included management and professional personnel from the Bureau, the Department of Commerce, and a few others familiar with the undercount issue and its implications. The purpose of the workshop was to raise all the relevant issues and assumptions relating to adjustment. It was structured to identify organizations or groups that would have a stake in the outcome of a given plan and to uncover the key assumptions involved in adjustment. The assumptions and issues were subjected to extensive debate, and those that would be key to making a decision on adjustment were isolated. The proceedings of the workshop were printed in October 1979 and widely circulated for review and comments.⁶

The Bureau next sponsored the Conference on Census Undercount held in Arlington, VA, in February 1980, to provide a forum for considering alternative approaches to measuring the census undercount and to assess the implications of adjustment. To investigate a broad range of concerns at the conference, the Bureau undertook a general solicitation of issue papers. Under the direction of a conference steering committee (see Key Personnel appendix in this publication series for steering committee and conference attendance lists), 17 papers were selected for presentation. The steering committee also guided the general planning and program for the conference. More than 140 academic, governmental, business, and legal professionals

⁶U.S. Bureau of the Census, *Proceedings of the Undercount Workshop*. October 1979.

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attended, and an account of the proceedings was issued in July 1980.⁷

Finally, a second undercount workshop was held in September 1980 to examine the most critical underlying assumptions that would establish a proper framework for deciding whether, when, and how to adjust 1980 census results for undercoverage and to reach a consensus on these within the Bureau. The findings of this workshop were issued in early October and circulated for comments.⁸

As mentioned in chapter 1, throughout this process the Director of the Bureau had announced his intention not to issue a decision on whether to adjust until late 1980, after the field enumeration was completed and when there might be some indication of the quality of the census. On December 11, 1980, the Director called a news conference to announce that the Bureau would not adjust 1980 census population totals unless directed by the courts to do so. This decision was also published in the *Federal Register*. (For more on the adjustment issue, see ch. 10 on litigation and legislation.)

Minority Statistics Program

The Census Bureau established the Minority Statistics Program in 1974 to obtain recommendations and support from minority populations and to encourage their participation and enumeration in the census, inform them of the usefulness of the statistics provided by the Bureau, and assist them in the use of such statistics. The minority populations included Blacks; Hispanics; American Indians, Aleuts, and Eskimos; and Asian and Pacific Islander Americans. The Minority Statistics Program functioned through several major components. One of these was the minority advisory committees discussed above, and two others were the National Services Program and the Community Services Program.

National Services Program—The Bureau's National Services Program, established in 1974 as a component of the Minority Statistics Program, developed and maintained contacts with national (as distinguished from local) minority organizations. The types of organizations covered included civil rights, economic and welfare rights, religious, media, professional, and business groups. Bureau representatives attended and, to the extent possible, participated in national conventions of these organizations.

The Bureau's convention activities frequently included a census exhibit or display, staffed by Bureau representatives. The exhibit visually presented the Bureau's program as it applied to the particular minority group, displayed a variety of publications, and provided request or order forms for publications. Bureau personnel were able to establish face-to-face contacts with leaders and members of the organizations, as well as with leading citizens of the host cities and with other exhibitors, who themselves often represented influential institutions and organizations. Presentations and workshops on the 1980 census were given by census staff at the conferences. Recommendations were sought for improving the accuracy of the population count and the quality of census data, assistance was provided regarding the use of Bureau publications and other statistics, and preliminary arrangements

were made for mutual cooperation in conducting the 1980 census.

Community Services Program—The Community Services Program (CSP), another component of the Minority Statistics Program, was established in 1974. It grew out of the experience with the 1970 census Community Education Program. The CSP developed and maintained communication with minority groups and influential individuals at regional, State, and local levels, unlike the National Services Program, which communicated with national organizations. Contacts were made with local leaders and institutions that exerted influence on persons who might not ordinarily be counted in the census. The program sought to obtain the trust and active cooperation of such groups and individuals and to convince them of the confidentiality of the information they furnished. It also endeavored to make them aware of the advantages of being included in the census, to inform them of the availability of Bureau data useful to them, to explain the uses of the data, to obtain recommendations for improving the coverage and quality of the census, and to enlist their help in recruiting census district office and field staffs. More than 200 community services specialists were active in the field by Census Day, April 1, 1980.

Other Contacts

Data User News—This publication, originally called *Small Area Data Notes*, has been published monthly since 1970 and provides information on new reports, services, and Bureau activities, including the 1980 census. More than 9,000 copies were distributed each month in 1980. This publication served as a means both of informing data users on the status of the 1980 census and as a forum for requesting users' opinions on a variety of subjects.

1980 Census Update—This publication first appeared in January 1977, and quarterly thereafter, as a supplement to the *Data User News*. Its last issue was July 1981. By 1980, more than 25,000 copies were being distributed outside the Bureau. The purpose of *Update* was to keep a wide range of people concerned with the 1980 census informed on its activities and products. For instance, the first issue discussed census law, reapportionment and redistricting data, data user contacts, the Minority Statistics Program, and pretest activities.

1980 census users' conferences—Major conferences were held in 15 large cities between September 1979 and January 1980 to familiarize the public with the status, content, and programs of the 1980 census and to provide information on the availability of 1980 census products. Conferences for about 4,200 persons were sponsored by the Bureau's regional offices, State data centers (formed under joint statistical agreements between the Bureau and the States), previous local public meeting sponsors, and/or others. (See app. 2A for the list of meetings.) For instance, a November 1979 meeting in the city of New York was sponsored by the New York City Department of Planning, the local chapters of the American Statistical Association and the American Marketing Association, and the Census Bureau's New York regional office. Expenses for these conferences—travel costs of Bureau personnel, materials and facilities—were paid by the

⁷U.S. Bureau of the Census, *Conference on Census Undercount*. July 1980.

⁸U.S. Bureau of the Census, *Proceedings of the Second Census Undercount Workshop*. October 1980.

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Bureau. The local sponsors, with guidance from the Bureau's regional data user services officers, were responsible for setting conference dates, obtaining and approving facilities, registration, and other arrangements.

The conferences were generally conducted by a team of two, one from Bureau headquarters and one from a regional office, using a standardized presentation, including visual aids and reference materials. The meetings usually covered an overview of the 1980 census; questionnaire design, data collection, and processing; geographic and subject content definitions and concepts; data products; uses of census data; and availability of user services. The meetings were promoted by brochures, press releases, and notices in trade and professional journals and newsletters.

A second phase of the 1980 census users' conference program concentrated on holding meetings in States where they had not previously been held. A further goal was to hold at least one in each SMSA. These meetings were conducted throughout 1980 and into 1981, and were the responsibility of the regional data user services officers (now called information services specialists). All expenses were met by local sponsors, including the travel costs of Bureau participants.

PRETESTS AND DRESS REHEARSALS

One of the most important components of the planning for the 1980 census was the series of pretests and dress rehearsals that were conducted between 1975 and 1979. The pretests were designed to examine the feasibility and cost-effectiveness of alternative or new field methodologies, enumeration procedures (particularly those designed to improve the coverage of

the population), and questionnaire content items. These tests ranged in scope from one-subject tests, such as the National Mail Income Pretest, to the three major pretest censuses that were conducted in Travis County (in the Austin SMSA), TX, Camden, NJ, and Oakland, CA. These pretests were "mini-censuses" in which most facets of enumeration were studied. The dress rehearsal censuses conducted in the Richmond, VA, area, in two counties in southwestern Colorado, and in that part of New York's Manhattan Borough south of Houston Street were the final run-throughs of procedures planned for the 1980 census. During the dress rehearsals, efforts were made to keep the testing of new procedural and questionnaire content alternatives to a minimum, with the intention of changing only those methodologies that proved problematical. In fact, it was necessary to test a few alternatives and to introduce a limited number of new procedures in the dress rehearsals, and some procedural and content changes were made as a result of the experiences in them.

The extensive evaluation process for the tests consisted of formal statistical analyses, time studies, reports based on personal visits to observe the field operations, and headquarters interdivisional meetings. Some of the statistical analyses appeared in a series of results memoranda that are listed in appendix 2B; the factfinding visits to the field offices were recounted in "field observation reports"; and other observations or decisions were included in interdivisional memoranda.

The tests with their dates and costs are listed below. Dates shown are generally for the time of questionnaire mailout or the beginning of enumeration or listing, but where there was no such key activity, a general time frame is given.

A pretest conducted in Puerto Rico is discussed in Chapter 11, "Puerto Rico and Outlying Areas."

Test	Date	Cost (dollars)
San Bernardino County, CA, Special Census	April 1975	104,000
Salem County, NJ, Income Pretest	April 1975	170,000
National Mail Income Pretest	May 1975	29,000
Rural Listing Test	September 1975	311,000
Pima County, AZ, Special Census	October 1975	77,000
Tape Address Register Development Test	Fall 1975-	208,000
	Winter 1976	
Travis County, TX, Pretest	April 1976	2,294,000
Data Collection Unit Test	May 1976	111,000
National Content Test	July 1976	653,000
Camden, NJ, Pretest	September 1976	1,216,000
Navajo Reservation Pilot Study	September 1976	*250,000
Rural Relist Test	January 1977	269,000
Oakland, CA, Pretest	April 1977	3,945,000
Dress Rehearsals		
Richmond, VA area	April 1978	
La Plata and Montezuma Counties, CO	April 1978	
Lower Manhattan, NY	September 1978	4,711,000
National Test of Spanish Origin ¹⁰	July 1978	19,000

¹⁰The Census Bureau bore about one-third of the cost, while the remainder was covered by other interested Federal agencies.

¹⁰This was not part of the dress rehearsal censuses, but it is discussed under the heading of "Lower Manhattan."

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San Bernardino County, CA, Special Census

In the spring of 1975, the Bureau carried out a special census at the request of the officials of San Bernardino County, CA. (The Bureau conducts special censuses between decennial enumerations at the request and expense of local governments. Usually, only population totals and a limited number of characteristics are provided.) Although the county bore the expense for the special census, the Bureau paid for testing several proposals related to 1980 census planning. Two district offices for the special census, in the cities of Barstow and San Bernardino, opened in early March and closed in late May and late June, respectively. Census Day was April 1.

The San Bernardino County test was not used to test office organization or procedures, but offered the first opportunity to try a plan to place computer terminals in district offices as part of the Bureau's 1980 data communications network. (In 1970, data-entry terminals were located only in the regional offices and in Bureau headquarters.) The district office terminals were tested for use in: (1) the transmission of population and housing unit counts for the smallest geographic levels to headquarters for editing and aggregation to higher-level geography, (2) the preparation of cost and progress reports for management and control of data collection and processing, (3) the payment of field staff, and (4) facilitating a local review of population housing-unit counts. Although there were some problems with the communications system, the results of the test showed that the proposal was worth pursuing further, and the terminal configuration was employed with some modifications in several later tests—Pima County, AZ, Travis County, TX, Camden, NJ, and Oakland, CA.¹¹ The decision was eventually made, however, not to place terminals in the census district offices in 1980 because of the cost involved and the potential difficulty in servicing the equipment.

A procedure for the local review of census counts was also tested for the first time. The Bureau had wanted to include a review of both preenumeration housing-unit estimates and postcensus preliminary population and housing-unit counts by local officials before closing the district offices. Since special censuses are conducted by the door-to-door technique, however, there was no mailing list from which preenumeration housing-unit estimates could be derived; thus, local review was limited to postcensus counts at the block level. Because this program had not been tested before, there were no specific procedures for conducting the review, and these had to be worked out during the test. The population counts were released at a press conference attended by officials from the county and most of its 14 incorporated places. Among the recommendations coming from officials during this test were that a standard local review informational package be developed for mailing to local jurisdictions and that the local officials be notified about the program at an early date. One important question not resolved in this test was what evidence of an undercount had to be provided by local officials before the Bureau's district office would send out field workers to recheck the count. Local review was tested in a number of subsequent tests, and remained a part of 1980 census planning, although its bipartite nature—preenumeration and

postenumeration—was modified: In the 1980 census, there was one review phase, conducted between the first and second waves of followup.

Vacant mobile homes and trailers available for occupancy were excluded from the 1970 housing inventory, but were counted in San Bernardino County as a means of better reflecting the amount of available housing. They were not counted if located on a sales lot, used for business purposes, used only for extra sleeping space, or not intended for occupancy where they stood. Based in part on the results of this test, this type of housing unit was included in the 1980 census. In another experiment as part of this test, the creation of blocks in rural areas using topographical features as boundaries proved infeasible. Enumerators had difficulty canvassing the blocks with nonroad boundaries in a systematic manner and in assigning households to the correct blocks.

Salem County, NJ, Income Pretest

The Salem County, NJ, income pretest was designed to test the feasibility and methodology of collecting income data on a 100-percent basis, i.e., inquiring about income on both the short- and long-form questionnaires.

Income statistics were collected on a 20-percent sample basis in 1970. Inasmuch as sample data are not as accurate as complete-count data, and are relatively less accurate for small places than for large ones, there had been a demand for improved income statistics for small areas since the publication of the 1970 census income data. These were particularly important in the light of revenue-sharing needs since revenue-sharing legislation had been enacted in the early 1970's. In response to these demands, the Bureau developed and tested a version of the income question for inclusion on the short form.¹² The purpose of the Salem County test was to compare for accuracy the results derived by using three short-form variants of the income question with those from the more detailed question on the long-form questionnaire.

Salem County was chosen as the test site because its 1970 demographic profile was sufficiently representative of the Nation's that valid insights could be drawn and results could be compared with those of a companion national test. Salem County's 1970 population of about 60,000 (about 15 percent was Black) was also large enough to assure statistical reliability.

Census Bureau enumerators compiled a list of mailing addresses in Salem County. Questionnaires were sent to each housing unit on the list on April 24 and 25, 1975, and householders were asked to mail back their forms to the local census office in the city of Salem. There were four questionnaires, each containing a different income question. Each questionnaire was sent to a different 25 percent of the housing units, and a card reminding persons to fill out and mail back their form was sent to each address a week later.

The form D income question (see fig. A) was the most detailed and was used for control purposes. A similar multipart question was being considered for the 1980 census long form. It was assumed that the more detailed the question, the more income

¹¹A report, "Feasibility Study for Data Entry and Communication Network (DEACON)," summarizing the findings from the tests, was issued in October 1977.

¹²The questions on the census short form are also asked on the long form and are asked of every person or household. The data from these questions are called "complete-count" or "100-percent" data. The long form also contains questions asked of a sample of the population and the data derived from these questions are called "sample" data.

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Figure A. Salem County and National Mail Income Test Question Variants

Form A

9. Did this person receive any earnings in 1974 from:	Wages or salaries
a. Wages or salaries?	<input type="radio"/> Yes <input type="radio"/> No
b. Own farm or nonfarm business, partnership, or professional practice?	Business or farm
	<input type="radio"/> Yes <input type="radio"/> No
10. Last year (1974) did this person receive any income from:	Interest, dividends, net rental income
a. Interest, dividends, or net rental income?	<input type="radio"/> Yes <input type="radio"/> No
b. Social Security or Railroad Retirement?	Social Security or Railroad Retirement
	<input type="radio"/> Yes <input type="radio"/> No
c. Public assistance or welfare?	Public assistance or welfare
	<input type="radio"/> Yes <input type="radio"/> No
d. Unemployment compensation, veterans' payments, pensions, alimony, or any other income received regularly?	Other income
	<input type="radio"/> Yes <input type="radio"/> No
11. What was this person's total income in 1974 from all sources?	<input type="radio"/> None <input type="radio"/> \$8,000 to \$9,999 <input type="radio"/> Loss <input type="radio"/> \$10,000 to \$11,999 <input type="radio"/> \$1 to \$499 <input type="radio"/> \$12,000 to \$14,999 <input type="radio"/> \$500 to \$999 <input type="radio"/> \$15,000 to \$19,999 <input type="radio"/> \$1,000 to \$1,999 <input type="radio"/> \$20,000 to \$24,999 <input type="radio"/> \$2,000 to \$3,999 <input type="radio"/> \$25,000 to \$34,999 <input type="radio"/> \$4,000 to \$5,999 <input type="radio"/> \$35,000 to \$49,999 <input type="radio"/> \$6,000 to \$7,999 <input type="radio"/> \$50,000 or more

Form B

9. How much did this person earn in 1974 from:	\$ _____ .00	OR	<input type="radio"/> None																																																																								
a. Wages or salaries? (Before deductions for taxes, bonds, dues or other items.)	Dollars only																																																																										
b. Own farm or nonfarm business, partnership, or professional practice? (Net after operating expenses. If business lost money, write "Loss" above amount.)	\$ _____ .00	OR	<input type="radio"/> None																																																																								
Dollars only																																																																											
10. Last year (1974) how much did this person receive from other income such as:	\$ _____ .00	OR	<input type="radio"/> None																																																																								
a. Interest, dividends, or net rental income?	Dollars only																																																																										
b. Social Security or Railroad Retirement?	\$ _____ .00	OR	<input type="radio"/> None																																																																								
Dollars only																																																																											
c. Public assistance or welfare? (Include Supplemental Security Income, AFDC, or other public assistance.)	\$ _____ .00	OR	<input type="radio"/> None																																																																								
Dollars only																																																																											
d. Unemployment compensation, veterans' payments, pensions, alimony, or any other income received regularly? (Exclude lump sum amounts such as gains from sale of property.)	\$ _____ .00	OR	<input type="radio"/> None																																																																								
Dollars only																																																																											
11. What was this person's total income in 1974? (Add all entries in questions 9 and 10.)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>O</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>F</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>F</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td></tr> <tr><td>I</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td></tr> <tr><td>C</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td></tr> <tr><td>C</td><td>5</td><td>5</td><td>5</td><td>5</td><td>5</td></tr> <tr><td>E</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr> <tr><td>U</td><td>7</td><td>7</td><td>7</td><td>7</td><td>7</td></tr> <tr><td>S</td><td>8</td><td>8</td><td>8</td><td>8</td><td>8</td></tr> <tr><td>E</td><td>9</td><td>9</td><td>9</td><td>9</td><td>9</td></tr> <tr><td>OR</td><td>A</td><td>A</td><td>A</td><td>A</td><td>A</td></tr> <tr><td><input type="radio"/> None</td><td></td><td></td><td></td><td></td><td></td></tr> </table>			O	0	0	0	0	0	F	1	1	1	1	1	F	2	2	2	2	2	I	3	3	3	3	3	C	4	4	4	4	4	C	5	5	5	5	5	E	6	6	6	6	6	U	7	7	7	7	7	S	8	8	8	8	8	E	9	9	9	9	9	OR	A	A	A	A	A	<input type="radio"/> None					
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OR	A	A	A	A	A																																																																						
<input type="radio"/> None																																																																											

Form C

9. What was this person's total income in 1974?	<input type="radio"/> None <input type="radio"/> Loss <input type="radio"/> \$1 to \$499 <input type="radio"/> \$500 to \$999 <input type="radio"/> \$1,000 to \$1,999 <input type="radio"/> \$2,000 to \$3,999 <input type="radio"/> \$4,000 to \$5,999 <input type="radio"/> \$6,000 to \$7,999 <input type="radio"/> \$8,000 to \$9,999 <input type="radio"/> \$10,000 to \$11,999 <input type="radio"/> \$12,000 to \$14,999 <input type="radio"/> \$15,000 to \$19,999 <input type="radio"/> \$20,000 to \$24,999 <input type="radio"/> \$25,000 to \$34,999 <input type="radio"/> \$35,000 to \$49,999 <input type="radio"/> \$50,000 or more
<i>Include wages or salary before deductions for taxes, dues, or other items; income from business or farm (net after operating expenses); and income received regularly from any other source.</i> <i>Exclude lump sum amounts such as gains from the sale of property.</i> <i>See instructions for question 9 on page 4.</i>	

Form D

18. Earnings in 1974. Fill parts a, b, and c for everyone who worked any time in 1974 even if they had no income. If exact amount is not known, give best estimate.			
a. How much did this person earn in 1974 in wages, salary, commissions, bonuses, or tips from all jobs?	<div style="display: flex; align-items: center; justify-content: space-between;"> (Before deductions for taxes, bonds, dues, or other items.) \$ _____ .00 </div> <div style="text-align: right; margin-top: -10px;"> (Dollars only) OR <input type="radio"/> None </div>		
b. How much did this person earn in 1974 from own nonfarm business, professional practice, or partnership?	<div style="display: flex; align-items: center; justify-content: space-between;"> (Net after business expenses. If business lost money, write "Loss" above amount.) \$ _____ .00 </div> <div style="text-align: right; margin-top: -10px;"> (Dollars only) OR <input type="radio"/> None </div>		
c. How much did this person earn in 1974 from their own farm?	<div style="display: flex; align-items: center; justify-content: space-between;"> (Net after operating expenses. Include earnings as a tenant farmer or sharecropper. If farm lost money, write "Loss" above amount.) \$ _____ .00 </div> <div style="text-align: right; margin-top: -10px;"> (Dollars only) OR <input type="radio"/> None </div>		
19. Income other than earnings in 1974. Fill circles and enter appropriate amounts. If exact amount is not known, give best estimate.			
<p>During 1974 did this person receive any income from the following items? If "Yes" to any of the items below — How much did this person receive?</p>			
a. Interest	<input type="radio"/> Yes	<input type="radio"/> No	\$ _____ .00
Dividends	<input type="radio"/> Yes	<input type="radio"/> No	(Dollars only)
Net rental income	<input type="radio"/> Yes	<input type="radio"/> No	"Less" above amount
b. Social Security or Railroad Retirement	<input type="radio"/> Yes	<input type="radio"/> No	\$ _____ .00
			(Dollars only)
c. Supplemental Security Income from Federal or State Governments ..	<input type="radio"/> Yes	<input type="radio"/> No	\$ _____ .00
Aid to Families with Dependent Children	<input type="radio"/> Yes	<input type="radio"/> No	(Dollars only)
Other public assistance	<input type="radio"/> Yes	<input type="radio"/> No	
d. Unemployment compensation	<input type="radio"/> Yes	<input type="radio"/> No	\$ _____ .00
Veterans' payments	<input type="radio"/> Yes	<input type="radio"/> No	
Government employee pensions	<input type="radio"/> Yes	<input type="radio"/> No	
Private pensions or annuities	<input type="radio"/> Yes	<input type="radio"/> No	
Any other sources of regularly received income	<input type="radio"/> Yes	<input type="radio"/> No	\$ _____ .00
<p>(Dollars only)</p>			
20. What was this person's total income in 1974? (Add all entries in questions 18 and 19.)	<div style="display: flex; align-items: center; justify-content: space-between;"> \$ _____ .00 (Dollars only) </div> <div style="text-align: right; margin-top: -10px;"> OR <input type="radio"/> None </div>		

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would be reported and the more valid the statistics would be. Because of space constraints, any income question on the short form would have to be less detailed. Form D asked respondents to enter specific dollar amounts for 3 categories of earnings and for 4 categories of income other than earnings, and to mark "Yes" or "No" circles for 12 sources of income other than earnings. A specific total-income entry was included to aid census clerks in the editing of income responses.

The form A short-form income question required "Yes" or "No" answers to the receipt of six types of income. In addition, there was a total-income question with 16 response categories.

The form B short-form income question required respondents to write in specific dollar amounts for six sources of income and for total income.

The form C short-form income question asked only for total income and required that the respondent fill 1 of 16 circles to indicate the appropriate interval in which his/her income fell.

From the test results it was concluded that form A was preferable, purely from the standpoint of better income data, relative to form D, but the form C question was deemed viable and had the advantage of requiring less space on the short-form questionnaire than form A. The form B version had the major drawback of requiring hand-coding, which is very costly and time-consuming. Further testing of the income question alternatives was conducted in the National Mail Income Pretest and other tests.

Although testing proved the feasibility of collecting income data on a 100-percent basis, the desire to reduce respondent burden and to cut costs led to a decision in late 1977 to drop the income question from the short form and include it only on the long-form questionnaire. This led to the implementation of the differential sampling rate described in the Richmond, VA area. (See fig. B for the final 1980 census version of the income question.)

National Mail Income Pretest

In May 1975, the Bureau conducted a national test of the four income questions tested in Salem County, NJ, using a sample of 19,700 housing units. Questionnaires were mailed to each housing unit in the sample on May 8, with about one-quarter of the units receiving each of the four variant forms (A, B, C, and D). Householders were asked to complete the forms and mail them to the Bureau's processing center in Jeffersonville, IN, where they were edited and followed up by a telephone call or in the field, when necessary. A subsample of nonresponse cases was assigned to current survey interviewers for followup. Final processing work on the test was completed in late August.

The major concern, as in Salem County, was the extent to which variants A, B, and C measured income in relation to variant D. The study showed that the differences between the versions were slight and not statistically significant. The conclusion from the test was that the cost of using form B in terms of questionnaire space and the time and cost involved in hand-coding were unwarranted, since it was likely that the data from either form A or form C would provide nearly as accurate income statistics. Since A required more space than C, it was decided to further test the items. In subsequent tests, version C was changed slightly to list in the question the most important sources of income the respondent should consider in filling in the total-income circles.

Figure B. 1980 Census Income Question

32. Income in 1979 —

Fill circles and print dollar amounts.

*If net Income was a loss, write "Loss" above the dollar amount.
If exact amount is not known, give best estimate. For income received jointly by household members, see instruction guide.*

During 1979 did this person receive any income from the following sources?

If "Yes" to any of the sources below — How much did this person receive for the entire year?

- a. Wages, salary, commissions, bonuses, or tips from all jobs . . . Report amount before deductions for taxes, bonds, dues, or other items.

Yes → \$.00
 No _____
(Annual amount - Dollars)

- b. Own nonfarm business, partnership, or professional practice . . . Report net income after business expenses.

Yes → \$.00
 No _____
(Annual amount - Dollars)

- c. Own farm . . .

Report net income after operating expenses. Include earnings as a tenant farmer or sharecropper.

Yes → \$.00
 No _____
(Annual amount - Dollars)

- d. Interest, dividends, royalties, or net rental income . . . Report even small amounts credited to an account.

Yes → \$.00
 No _____
1 *(Annual amount - Dollars)*

- e. Social Security or Railroad Retirement . . .

Yes → \$.00
 No _____
(Annual amount - Dollars)

- f. Supplemental Security (SSI), Aid to Families with Dependent Children (AFDC), or other public assistance or public welfare payments . . .

Yes → \$.00
 No _____
(Annual amount - Dollars)

- g. Unemployment compensation, veterans' payments, pensions, alimony or child support, or any other sources of income received regularly . . .

Exclude lump-sum payments such as money from an inheritance or the sale of a home.

Yes → \$.00
 No _____
(Annual amount - Dollars)

33. What was this person's total income in 1979?

Add entries in questions 32a through g; subtract any losses. \$.00
(Annual amount - Dollars)

*If total amount was a loss,
write "Loss" above amount.*

OR None

Rural Listing Test

In the fall of 1975, the Bureau tested three alternative prelisting procedures in each of three areas in the rural South. The extension of the mailout/mailback census method required an improvement of listing procedures for rural areas. Prelist is an operation in which address lists are constructed for mail census areas for which no computerized geocoding files and/or commercial mailing list is available. Census enumerators travel through an area listing the address of each unit they find. The purpose of the test was to determine which of three procedures was best in terms of cost and housing-unit coverage.

Test offices were opened in mid-August 1975, in Yellville, AR, to cover Marion, Searcy, Stone, and Van Buren Counties; in Ruston, LA, for Bienville and Jackson Parishes; and in Mendenhall, MS, for Jefferson Davis, Covington, and Smith Counties. Separate areas were selected to allow representative readings across the various types of areas to be prelisted for the 1980 census. Contiguous counties were selected in each of the three areas, which had a total 1970 population of 102,000. Several factors were considered in choosing the test sites. First, the test was restricted to the South because most of the 1980 prelist workload would be there, and because the region was believed to have had the highest total missed rate for housing units in 1970. Most of the rural South had been enumerated with conventional door-to-door methods in 1970, but was targeted for mailout/mailback procedures in 1980. Second, since the undercoverage of the Black population in 1970 was greater than for the White, areas were selected (except for the Arkansas counties) that had enough Black persons to see if coverage differences between procedures would vary by race. Third, since the focus was on rural areas, counties with places of 5,000 or more people were excluded. Fourth, counties where any of the Bureau's ongoing sample surveys were taking place were also omitted to avoid putting an undue burden on certain households. Finally, because of cost and administrative considerations, all the test counties were within the boundaries of one Census Bureau regional office.

The three listing procedures tested in the Rural Listing Test were:

P1—Inquire when necessary—Enumerators tried to obtain addresses by observation or from neighbors. When they sought address information from a resident of a unit, they also attempted to get addresses for nearby units. This procedure was similar to that used in 1970.

P2—Inquire at every structure, limited callbacks—Enumerators knocked on every door to obtain address information from the householders. If no one was home, they tried to obtain information by observation or from neighbors, or failing this, a single callback to the address was allowed.

P3—Inquire at every structure, unlimited callbacks—Enumerators inquired at every structure, as with P2. They were allowed to make several return visits to a housing unit until they found someone at home. Neighbors or observation were used only as a last resort.

All three procedures incorporated changes from 1970 that were designed to improve coverage. These included a structured path of travel (canvassing one block at a time) for enumerators

and a post office check of the address lists for completeness and accuracy.

Each test area was completely and independently listed twice, once with a crew of enumerators using method P1 and once with a second crew using P2. The P3 listing was then simulated by making additional callbacks for P2 address listings that had been obtained from neighbors or by observation. In Louisiana and Mississippi, the P1 canvass was conducted first; in Arkansas, the P2 canvass was first.

Results of the test led to a recommendation that P2 (inquire at every structure, with limited callbacks) be used to prelist rural areas for the 1980 census, and this was done. Coverage was better with both P2 and P3 than with P1 (by 2.1 percent and 2.4 percent, respectively) but P3 did not provide enough additional coverage to offset the increased cost per net listing using that procedure. P3 cost 26.4 percent more per net listing than P1, and P2 cost only 7.5 percent more than P1. The test also showed that the amount of improvement from a postal check of the prelist address lists was large enough (at least 4.2 percent in each of the three areas) to make such checks desirable operations for 1980. The prelisted addresses for the census underwent two post office checks in the spring of 1980, but not an advance check in 1979, as had been proposed. Coverage differences between the three procedures in the Rural Listing Test did not vary significantly by race.

A quality control operation of the listings in a sample of enumeration districts (ED's) was tested to see what effect it would have on improving coverage. A quality control crew leader listed a string of 25 housing units in each ED. These 25 addresses were then matched to completed address registers for the ED. If a certain number of the 25 addresses were found not to be listed in the address registers, the ED was rejected and recanvassed. The results of the test showed that the quality control operation was useful in identifying poorly listed ED's. This quality control check of the prelist operation was instituted, in a slightly different form, for the 1980 census.

Pima County, AZ, Special Census

A special census of Pima County, AZ, conducted as of October 20, 1975, served as the test site for several 1980 census proposals. Two of these—the feasibility of operating computer terminals in the district offices in 1980 and the utilization of local officials to review preliminary population and housing counts—had already been tested in San Bernardino County, CA. The third—the use of local, noncensus name lists ("nonhousehold source" lists) to improve coverage—was tested for the first time. As in San Bernardino County, the costs of the special census itself were covered by the county, and the Bureau assumed the costs for the tested proposals. A district office was opened in Tucson.

The second test of computer terminals in a district office involved improvements in the basic procedures used in San Bernardino County. The experience with maintaining the equipment was unsatisfactory, however, and it was perceived that maintenance could be one of the major problems in the use of district office terminals in 1980.

Pima County governmental jurisdictions were generally pleased with the Bureau's local review program. As in San Bernardino County, door-to-door enumeration methods and the absence of

a mailing list meant that precensus address counts were not available. Local officials compared postcensus preliminary population and housing-unit block counts derived from the census with their estimates based on aerial photographs, field canvassing, vacancy rates, and housing-unit densities. The local officials believed that the 10 days allowed for review was not enough time to check the figures adequately.

In the test of a new coverage-improvement program, the Bureau undertook to check local lists of names and addresses against the Bureau's address registers to determine the efficacy of using such lists to identify persons who may have been missed in the census. About 2,700 names and addresses of mostly Spanish-origin persons were obtained from four local sources; these were largely lists of persons who had sought aid or assistance from various community organizations. Each name and address was matched to the census address registers, and nonmatches (names on the local lists that did not appear on the census register) were followed up. The check discovered that about 6 percent, or 160, of the individuals on the lists had not been enumerated on Census Day. In addition, in the process of following up those persons on the lists, 231 other people not on the lists were also found not to have been enumerated. The check yielded an increase of about 0.5 percent to the Spanish-origin population in the special census.

Tape Address Register Development Test

Columbus, OH, was selected as the site for a test of certain issues related to creating mailing lists in tape address register (TAR) areas. TAR areas were city-delivery areas in urban centers where the initial mailing lists were on computer tapes purchased from commercial vendors.¹³ In TAR areas, most addresses were geographically coded (geocoded) by computer. This geocoding operation required, in addition to purchased address files, computerized geographic base files (GBF's) that contained the geographic codes for specific address ranges. In 1970, city postal delivery areas covered by geocoding files in 145 SMSA's were TAR areas; it was proposed that for 1980 such areas be TAR areas in all SMSA's.

The Tape Address Register Development Test was designed to evaluate techniques for geographically coding address files and to study methods for updating the 1970 tape address files. Specifically, the test examined the feasibility of updating the 1970 address registers for Columbus, OH, by adding new addresses from four commercial sources, subjecting the list to a post office check, and geographically coding the updated list. The quality of the four commercial address sources was evaluated and two different geocoding techniques were tested in the fall and winter of 1975-76.

Based on this test and other experiences, the decision was made to expand the number of TAR areas to encompass all SMSA's for which there were workable geocoding files. However, an update of 1970 address files was part of the process in only a handful of SMSA's, and was never the sole means of compiling a 1980 list.

¹³Areas for which computerized lists could not be purchased were called "prelist" areas and were discussed in relation to the Rural Listing Test. See ch. 3 for a detailed discussion of TAR and prelist areas.

Travis County, TX, Pretest

The first major pretest for the 1980 census was conducted in Travis County, TX, in the spring of 1976. Census Day was April 20; the district office, located in Austin, opened in late January and closed in mid-September, about 2 months behind schedule. Unlike the tests that preceded it, the Travis County pretest was a minicensus, involving the use of the field and office procedures that were proposed for 1980. The major purpose of the test was to examine field enumeration procedures and organization, including coverage-improvement techniques, and other proposals for the 1980 census. The mailout/mailback census technique was used; questionnaires were mailed to households a few days before Census Day and respondents were asked to return the forms by mail on Census Day. Households that did not return their questionnaires were visited by census enumerators.

Travis County was chosen as a pretest site because: (1) there was a corrected and updated geocoding file for Austin that allowed the coding of addresses from a commercial mailing list, (2) the county, which had about 373,000 people according to the test results, fell within the population range deemed suitable for testing purposes and called for by the available budget, and (3) the test area had substantial Black and Spanish-origin populations—Travis County was 10.7 percent Black and 15.6 percent Spanish-origin.

Close attention was given in this and subsequent major pretests to the rate at which householders cooperated by mailing back their questionnaires to the census office. The higher the mail-return rate, the less time and money are spent in following up on nonresponse households to obtain information.¹⁴ The overall mail-return rate for occupied housing units in Travis County was 78.4 percent—79.0 percent for short-form questionnaires and 75.7 percent for long forms¹⁵.

The questionnaires used in Travis County were similar in content to those used in 1970; the major changes were the inclusion of questions on income and Spanish origin on a 100-percent basis. Three types of questionnaires were used—two short forms, each distributed to about 40 percent of the households, and one long form, which went to about 20 percent of the households. The short-form versions differed in several respects: one offered more detailed categories under the Spanish-origin item¹⁶; one version asked respondents to give their total income (similar to form C in the Salem County and National Mail Income Pretests), but the other also included questions on the sources of earnings and income (similar to form A in the Salem County and National Mail Income Pretests); one short form contained a question on complete plumbing facilities, while the other had three separate

¹⁴In this publication, the mail-return rate is figured by dividing the number of questionnaires returned by the total number of occupied housing units. When calculated this way, the mail-return rate is generally considered a measure of public cooperation with the census. Another way is by dividing the number of questionnaires returned by the total number of questionnaires mailed out. Here the numerator of the calculation remains the same, but the denominator includes both occupied and vacant units, as well as nonexistent units to which questionnaires were sent. Figured this way, the mail-return rate is always lower and serves as a measure of the field followup workload, because during enumeration, nonresponding occupied units, vacant units, and some nonexistent units must be followed up in the field.

¹⁵According to results memorandum 21; results memorandum 8 had given the rates as 81.1, 81.8, and 80.8, respectively.

¹⁶See also discussion under "Oakland, CA, Pretest" below.

questions on hot and cold piped water, flush toilets, and bathtubs or showers. No formal testing of questionnaire content was planned for the Travis County pretest, although evaluations were conducted on the accuracy of answers to the questions on average monthly utility costs, mortgage status, and yearly real-estate taxes, certain employment questions, and the different versions of the plumbing facilities question.

Spanish-language questionnaires, prepared by Bureau staff, were made available, in addition to those in English. This innovation was designed to improve the coverage of Spanish-origin persons who might not be able to understand the questionnaire in English. The main question for the pretest was how the forms would be distributed. Members of the Census Advisory Committee on the Spanish Origin Population had suggested that bilingual questionnaires be designed or that Spanish-language questionnaires be sent to all households, but because these approaches posed problems in terms of costs, field and processing operations, and public reception, the Census Bureau devised another means of distribution. All households were mailed an English-language questionnaire with a message in Spanish instructing respondents that if they wanted a Spanish-language form sent to them, they should either call the telephone assistance number printed on the questionnaire label and ask for one, or mark the appropriate box on their English-language form and mail it back so one would be sent. In Travis County, Spanish forms were not used by followup enumerators (though they were in later pretests and in 1980); however, bilingual enumerators were sent to enumerate Spanish-speaking households that did not return a form and answers were recorded on regular questionnaires. The number of requests for Spanish-language questionnaires was very low—only 50 out of over 15,000 households with a Spanish-origin householder.

Mailing lists for the Travis County pretest were created using a combination of two methods. For most of the Austin city-delivery area, a commercial address list was purchased. This list underwent three checks by the Postal Service, including an advance post office check in November 1975, another check in the early spring of 1976, and one performed the day the questionnaires were delivered to respondents. In addition, the list was checked for completeness by census enumerators in late February and early March in an operation called "precavass." Precavass occurred several weeks before Census Day and involved an in-the-field canvass in which workers updated the purchased mailing list, which had been geocoded, by adding missed units and correcting geographic codes.

Limited use had been made of the precavass operation in the 1970 census; it was employed only in selected tracts in 17 large SMSA's. Precavass was expanded in the Travis County pretest to the entire area covered by the commercial mailing list and the geocoding file. The operation added 1.7 percent to the housing-unit coverage that would not have been added by other operations. In addition, precavass did a very good job in detecting and correcting geocoding errors.¹⁷

In parts of Travis County not covered by the commercial mailing list and the geocoding file, census listers were sent into the field to compile addresses in a "prelist" operation. It was decid-

ed to use the Travis County prelist experience to compare the effects on coverage of an early listing (in October 1975) as opposed to a late listing (late February and early March 1976). It was assumed that the late listing would more accurately reflect the housing-unit composition at the time of the census, particularly in rural areas where names are an essential part of a mailing address. Results of the study showed that there may be lower coverage with an early listing than with a later listing, particularly in more rural areas. The difference in coverage for occupied housing units was estimated at about 1.0 percent for the entire test area and about 1.9 percent for rural areas. These differences might have been offset if an advance post office check had been conducted along with the early listing. The early and late listings were compared again in the Rural Relist Test.

In addition to the use of Spanish-language questionnaires, the evaluation of the precavass operation, and the test of alternative prelist procedures, various other techniques to improve coverage were tested in Travis County. One of these was a procedure tried earlier in the Pima County, AZ, special census to check independent lists of names (nonhousehold sources) against census records. The program was aimed at reducing the differential between the undercounts of Whites and minorities. About 2,300 drivers' license records for males, ages 17-35, who lived in two ZIP Code areas of Austin, TX, that contained large concentrations of Blacks and Hispanics were checked against the Bureau's address registers. In addition, several community organizations in Austin supplied a total of 660 names and addresses that were also checked. These lists were matched with the census records and persons who had not been enumerated were added to the census counts. (Additions to the counts were not actually made, but were simulated in this test.) In addition to the persons on the lists, other persons were also discovered not to have been counted. In Travis County, about 7 percent of the names on the lists would have been added to the counts. The drivers' license list yielded more added persons (taking into account those on the list and those picked up during the search) than the organization lists, about 11 percent and 8 percent, respectively. If the adds had actually been made, the counts for Black and Spanish males, ages 17-35, in the two ZIP Code areas would have increased 3.6 percent—3.3 percent for Blacks and 3.9 percent for the Spanish-origin males. This program was studied again in later pretests.

Another coverage improvement method tested was a check to see if persons who filed a change-of-address order with the Postal Service 1 month before or after Census Day had been enumerated. This procedure had been used in limited areas in the 1970 census and resulted in an increase in the population of only 0.06 percent. As a way of improving the operation, two approaches for following up movers by mail instead of by personal visit were tested. The results from Travis County showed an increase of only 0.01 percent to the population count. The "movers" operation remained a part of census planning through most of the test period, but a decision was made not to employ this coverage-improvement device in 1980 because it was not cost-effective and because the vacancy check duplicated the efforts of the postenumeration phase of the movers check.

In 1970 about 1 million people were added to the census count as a result of the National Vacancy Check, a large-scale sample program developed during that census to resolve the problem of an unexpectedly high vacancy rate which was believed to be erroneous. For 1980, it had been suggested that a followup check

¹⁷Coverage improvement procedures tested in the San Bernardino County, CA; Pima County, AZ; Rural Listing; Travis County, TX; and Camden, NJ; tests are discussed in the unpublished paper "Plans for Coverage Improvement in the 1980 Census," August 1978, by Peter Bounpane and Clifton Jordan.

of housing units with no reported population be conducted as a normal part of census operations while the district offices were still open. Various methods for conducting this check were tested in Travis County. Among the findings was that 7.5 percent of the units classified by enumerators as "vacant" or "nonexistent" were actually occupied; this represented a potential coverage loss of 0.67 percent of the population—results comparable to the 1970 census. The "vacancy/delete check," or unit status review, was tested further and eventually employed in the 1980 census.

In an effort to help respondents fill out their questionnaires, three types of assistance centers were used in Travis County, and their relative effectiveness was tested. The most successful type was the telephone assistance center in the census district office, which took calls from 8 a.m. to 11 p.m. for 8 days after Census Day; the telephone assistance number was printed on questionnaire labels. Stationary community walk-in centers and mobile vans (also operating for 8 days after Census Day) received less traffic; this was attributed to the lack of publicity about their locations and hours of operation. It was especially difficult to inform the public of the whereabouts of the vans. All three types of assistance centers were tested again in the Camden, NJ, pretest.

The first full-scale test of the local review program was undertaken in Travis County. (Earlier tests had been conducted as part of the San Bernardino County, CA, and Pima County, AZ, special censuses.) Local officials were asked to review address list counts of housing units prior to enumeration and preliminary population and housing unit counts after Census Day. During the preenumeration phase, some of the jurisdictions replied that they did not have sufficient time or suitable counts of their own with which to conduct a check. Those that did reply were generally pleased with the conduct of the census and in only a couple of cases were discrepancies in the counts noted. Building permits were the chief source used by local officials, but septic system records, tax rolls, and other sources were also used. No responses were received from local officials in the postenumeration phase.

A broad public information effort was undertaken in Travis County, involving representatives of the Bureau's Public Information Office, two community services representatives from the Bureau's Dallas regional office, the district office manager, and others. The theme for the pretest was "Everyone Counts," and posters bearing this slogan in English and Spanish were distributed. Brochures directed toward the Black and Spanish-origin communities were issued, as were flyers for elementary school children to take home to their parents, factsheets for the news media, and recruiting posters in both English and Spanish. There were spot announcements for both television and radio. Bureau representatives appeared on a number of television and radio shows, including those oriented to the minority communities.

Various other new procedures for field and office work were examined. These included the delivery of mail-return questionnaires from the post offices to the district office on a daily basis and a quicker start than in 1970 on the followup of housing units from which questionnaires were not returned. The feasibility of geographically coding responses to the place-of-work question in the district office instead of in a central processing center was tested on the assumption that local knowledge would contribute to more complete and accurate coding. While the operation pro-

duced fairly high quality, it was apparent that local knowledge did not lead to significantly more detailed answers, and that district office coding took longer than anticipated to complete. Place-of-work coding (which was also tried in the Camden, NJ, pretest) was, therefore, not conducted in the district offices in 1980, but was done in the processing centers as in 1970. Tests continued on the practicability of entering census counts into the Bureau's main computer from a terminal in the district office. Various procedures for counting persons residing in "special places" (military installations, college dormitories, hospitals, etc.) were also tested.

Data Collection Unit Test

The basic unit of enumeration is the enumeration district (ED), which contains, on the average, enough housing units to comprise the workload of one enumerator. (An ED's boundaries are also fixed by the limits of political and statistical entities.) The experience in previous censuses had indicated that when ED boundaries do not coincide with recognizable land features, there is a potential coverage loss. This occurs when an enumerator fails to list or count a housing unit that he or she mistakenly believes is in another ED. Also, geographic misallocations, double counting, or other related problems can occur when enumerators go outside the boundaries of their ED's. In an effort to test ED's constructed from natural, easily recognizable boundaries, the Data Collection Unit Test was conducted in Gallia and Meigs Counties, OH, in the spring of 1976. A district office for the test area (which included about 45,000 people) was opened in Gallipolis, OH, in April.

The traditional ED respects all boundaries that form data tabulation areas; that is, an ED is the area formed by intersections of all these boundaries. Data collection units, formed for this test, respected county and place boundaries, but they were not limited by other political or statistical boundaries as ED's are. Wherever possible, the data collection units were designed to follow natural features (such as roads) and their size was generally determined only by an optimum number of housing units for a followup enumerator's assignment. Political or statistical boundaries which bisected the data collection unit were used to create block groups, which became the basic tabulation units.

The purpose of the test was to determine whether ED's or data collection units produced better housing-unit coverage and geographic allocation of addresses and to see which was more cost-effective. There was nothing in the results of the test to indicate that data collection units should be preferred to ED's; the latter were used in 1980.

National Content Test

The National Content Test (NCT) and NCT reinterview were conducted to collect information on respondent answers to proposed new or modified census questions, to compare responses to alternative versions of certain questions, and to measure reporting errors associated with some of these questions. A national sample of about 28,000 housing units was divided into two panels representative of the U.S. population and of nearly equal size. Two questionnaires containing variant wordings or formats for some questions were developed for testing, and one questionnaire was randomly assigned to each panel. Question-

naires were mailed in early July 1976 from the Bureau's processing center in Jeffersonville, IN, and were to be completed and returned by mail to Jeffersonville. Followup by personal interview of households that did not mail back a questionnaire or whose questionnaire failed edit was conducted by the Bureau's regional offices' current survey interviewers.

About 2,300 households from each of the two NCT panels were selected as the sample for the content reinterview, conducted from mid-September to mid-October 1976, using direct personal visits by trained current survey interviewers. The reinterview questionnaire asked detailed questions on relationship, ethnic origin or descent, language, education, disability, and place of birth. Results of evaluations conducted during this test were used in conjunction with other studies to determine the final wording and format of 1980 census questions.

The primary purpose of the NCT reinterview questions on disability was to test the accuracy of the responses to the disability questions asked in the NCT. Answers to the NCT and reinterview disability questions were compared, and the degree to which the responses agreed was taken as a measure of the accuracy of the response to the NCT question. A substantial number of people who responded in the NCT that they were disabled answered that they were not disabled when reinterviewed, and vice versa. Of six activity areas for which questions were asked about limitation, the inconsistency was least for the activity "working at any job or business" and highest for "doing regular schoolwork." The number of persons disabled was also lower than what was expected based on independent estimates. Despite evidence of the inaccuracy of the responses to the disability question in the NCT and subsequent tests, demands for disability data remained great and an item focusing on the ability to work and to use public transportation was included on the 1980 census questionnaire.

With regard to questions on school enrollment and educational attainment, the NCT results provided evidence of the desirability of making several changes to these questions. The following changes were subsequently incorporated into the 1980 census questionnaire: The redesignation of "parochial" schools as "private, church-related," an instruction to those who finished high school by taking an equivalency test (such as the General Educational Development test) to mark grade 12, and making the highest college-year category "8 or more" instead of "6 or more" as in 1970. Answers to a question on highest degree received proved reliable, but the question was not included in the 1980 census because of space limitations. Answers to the vocational education questions on the NCT and the reinterview were relatively inconsistent and, thus, a question on vocational education was not included on the 1980 questionnaire.

The final format of the 1980 census place-of-birth question was based in part on the results of the NCT. Improvements were made which were designed to eliminate the two major problems with this item in 1970. One of these was that many respondents did not follow the instruction to name the State in which the mother lived when the respondent was born (rather than the location of the hospital). In the NCT, two different questions were used. One asked "Where was this person born?" and placed in a prominent position the instruction to report the State where the mother lived when the respondent was born. The other asked "Where was the mother of this person living when this person was born?" There were a number of difficulties with the latter

query and the decision for the 1980 census was to use the former approach. The other problem in 1970 concerned the design of the answer space. Respondents either could mark a circle for "This State" (the State where they resided) or write in another State; many respondents mistakenly gave their State of current residence rather than their place of birth (when these were different). Thus, for the NCT, the answer space was redesigned; the circle for "This State" was eliminated and all respondents were asked to write in their place of birth. This feature was retained for the 1980 questionnaire.

Among other questionnaire items tested in the NCT were income, language, race, ethnic origin, relationship, sex, age, and employment.

Camden, NJ, Pretest

The second major pretest was conducted in Camden, NJ, for the primary purpose of testing certain coverage-improvement techniques in a hard-to ENUMERATE area. The characteristics of a number of cities were analyzed in the process of selecting a site for the test. Camden was chosen because about 48 percent of the population was Black and 16 percent Spanish, and about 50 percent of its area was considered difficult to ENUMERATE.

A district office was opened in June 1976 and a permanent Census Bureau employee was chosen to run it. Census Day was September 14. The office did not close until March 1977, over 2 months behind schedule, due mainly to lags in the followup operations and to a protracted local review of the preliminary counts.

Mailout/mailback census procedures were used in Camden as they had been in Travis County. Only about 50 percent of the households mailed back their questionnaires, significantly fewer proportionally than in Travis County. This return rate was lower than expected and, thus, meant a heavier followup workload. Team enumeration was tested as a technique that could improve coverage in certain areas enumerators might be wary about entering. This technique had been utilized in several of the tests prior to the 1970 census and in the census itself, but no formal evaluations of its effect were conducted. A study was designed for Camden to evaluate the effect of team enumeration relative to individual enumeration on coverage and the quality of the completed work. Each census tract in the test area was divided into three parts, and each part was designated to be enumerated by one of three methods—enumerators working alone, enumerators working in pairs, or coverage of an area by an entire crew or team of enumerators. With the pair technique, each enumerator went to separate households but had the assurance that the other enumerator was close at hand. With the crew technique, each member of the crew enumerated nearby households separately and was under the direction of a crew leader who was responsible for making the assignments. The results of the study of team enumeration techniques revealed that either of the team methods produced better quality than single enumeration, and in both procedures production was slightly below that of the single method. Crew enumeration led to slightly better production rates than pair enumeration, but the quality of the work under the latter procedure was higher. Subsequent to this test, it was decided to use team enumeration in 1980 at the discretion of regional census managers to "clean up" specified difficult-to ENUMERATE areas; this was essentially the same approach used in 1970.

Chapter 2. Planning the Census

The Camden pretest questionnaires were basically the same as those used in Travis County. Two short-form questionnaires, containing the differences described in the Travis County forms, were each distributed to about 40 percent of the households. A long-form questionnaire was sent to the remaining 20 percent of households. Spanish-language questionnaires were available under the same procedures as in Travis County—by telephone request or upon mail return of the uncompleted English-language questionnaire. Requests for these translated forms were again minimal—133. Camden had about 3,600 households with a Spanish-origin householder in 1976.

The three types of assistance centers—telephone, walk-in, and mobile van—that had been used in Travis County were used again in Camden, though with some slight differences. The centers were open, generally, from September 10-24, although the vans and walk-in centers did not operate on Sundays and telephone assistance lines were not open the second Sunday in this period. One of the walk-in centers, situated at city hall, remained there; the location of two others changed daily, but their schedules were never fully or accurately publicized. One mobile van was used. The number for the telephone assistance center was printed on the questionnaire label. Unlike Travis County, where the telephone assistance operation was most successful, in Camden the walk-in centers produced nearly three-fourths of all contacts with the public. The stationary center at city hall had the most contacts, in part because it was in a convenient location where there was heavy pedestrian traffic.

The mailing list for the Camden test was created by purchasing a commercial list and subjecting it to three post office checks—an advance check about 5 months before Census Day, another check 2-3 weeks prior to Census Day, and a third at the time questionnaires were delivered. In addition, the list was updated in the field by census enumerators in the precanvass operation.¹⁸ The effectiveness of the precanvass operation in terms of improving coverage and geographic coding was again evaluated. In Camden, the percentage of housing units added to the address register by precanvass exclusively was 2.3 percent, compared with 1.7 percent for Travis County; if the procedures for the operation had been carried out as planned, the net add rate could have been 3.9 percent. For instance, a number of units that should have been added were not; one reason for this was that precanvass corrections clerks had difficulty matching apartment designations from the precanvass address registers to those in the master address registers, thus failing to add appropriate unit listings to the latter. As in Travis County, net add rates by census tract were examined to see in which areas—Black, Hispanic, difficult-to-enumerate, etc.—the add rates were higher. No clear-cut pattern emerged in the Travis County test, but in Camden the add rate in Hispanic tracts was lower than in non-Hispanic tracts.

The use of nonhousehold source lists to improve coverage was also tested in Camden. The primary source of names was a drivers' license list, as in Travis County; lists were also obtained from two community organizations. Unlike in Travis County, where only names and addresses of males in a certain age group in two minority-populated ZIP Code areas were taken from the drivers' license list, in Camden both sexes and all age groups

¹⁸Since the test area was limited to the city of Camden, all of which was covered by the commercial list, it was not necessary to conduct a prelist operation such as was described for Travis County.

across the entire city were included. All males 25-44 on the drivers' license list were in the sample, as were 1 in 10 of all the other males and 1 in 12 of the females. In all, about 6,100 cases were processed and, as a result, 521 persons—371 of those on the lists and 150 persons not on the lists but located during the search—were found to have been missed in the census. The added persons represented about 0.5 percent of the total population of Camden as compared with 0.7 percent for the two ZIP Code areas covered in Travis County. It was estimated that processing all drivers' license records for Camden would have improved the census count by 2 percent, and would have increased the figures for Spanish males age 17 and over by 6.9 percent and Black males age 17 and over by 3.1 percent. The yield rate (missed persons as a percent of cases processed) for the drivers' license file was about 8.3 percent and did not differ significantly for the three age/sex groups included in the sample. The results of the Travis County and Camden tests indicated that drivers' license lists were a more desirable independent list than community organization lists because they produced a higher yield rate, were easier to obtain, and were computerized.

Another study was conducted to see if the 1970 address registers could be matched to the commercial list of addresses purchased for Camden to improve housing-unit coverage. Housing units found to have been missed as a result of this match represented 0.4 percent of the Camden housing-unit count, including 0.3 percent of all occupied units and 0.8 percent of vacant units. The people who lived in the missed occupied housing units were about 0.2 percent of the Camden population. It was discovered that about 40 percent of the missed housing units should have been added by the precanvass operation, a finding which indicated that the yield from the 1970 address register match would be cut about in half if the precanvass were conducted correctly.

Several efforts were made to publicize the census and to mobilize the public to support it. One of these was the creation of a complete-count committee, modeled after a similar group set up in Detroit in 1970. The Camden test was the first use of this device in planning for the 1980 census. The Camden committee, which was picked by the mayor, undertook a number of projects helpful in publicizing the census. Members discussed the census before a number of organizations in the city. The committee encouraged local religious leaders to stress the importance of the Camden census to their congregations, either from the pulpit on a designated day or in church bulletins or newsletters. The committee was very effective in distributing posters and flyers to schools; children took some of the flyers home to their parents, while others were included with the paychecks of school system employees. Members of the committee also passed along word about the availability of census jobs to people in their organizations. One member, who represented a Camden radio station, assured that census spot announcements were aired. While the committee was of help in spreading awareness of the census, there was a lack of written guidelines from the Bureau, and efforts were made to provide these for subsequent tests.

As in Travis County, a community services representative (CSR) was assigned to the Camden area to carry out various functions related to publicity, community organization, and community outreach. The CSR for Camden served as liaison between the district office and the complete-count committee. In addition, the CSR made personal visits to community leaders, organiza-

tions, and agencies, explaining the importance of the census and the need for local support, obtaining commitments for space, assistance, and publicity, and aiding the recruitment of census workers, among other things.

The Bureau's formal public information campaign in Camden utilized both the print and electronic media and distributed an average of one piece of informational material for each person in the city. Nine news releases and 17 radio and television spot announcements were sent to various news outlets. Bureau representatives appeared on a number of radio and television programs, including Black- and Puerto Rican-oriented shows. The informational material included posters, brochures, flyers, and a handout on confidentiality and data use.

A small-scale sample survey was conducted in Camden to evaluate the relationship between contact with the public information campaign and cooperation with the census. Respondents' demographic characteristics, knowledge, and attitudes were also examined as factors that affect cooperation. Respondents reported that of the six channels of communication studied, they remembered hearing about the census most often from newspapers, followed by: conversations with friends, acquaintances, and coworkers; television, and, to a lesser extent, radio; posters and handbills; and presentations at meetings of community groups. (The local television stations were based in Philadelphia, PA, so the census did not receive as much attention as it would during the 1980 enumeration.) The study supported the hypothesis that contact with the public information campaign led to increased cooperation with the census (in terms of mailing back questionnaires) and cooperation increased with the number of sources through which exposure to census information was reported. Mail-return rates were significantly higher for those who had heard about the census before they received a questionnaire, but since almost half of the respondents reported no such contact, the components of the questionnaire mailing package were seen as important publicity channels. To determine respondents' knowledge about the census, they were asked who was responsible for conducting the Camden census, whether they were familiar with confidentiality provisions, whether they knew when the next decennial census would be taken, and whether they knew that answering census questions is mandatory. There was a significant association between the level of knowledge and cooperation; and the greater the contact with the public information campaign, the more likely the respondent was to give a correct answer to the four questions. There was only a weak association between attitudes toward the census and mail response. With regard to respondent characteristics, three variables—the number of years the respondent lived in Camden, the number of years lived in the neighborhood, and age—were significantly related to cooperation. A fourth variable—sex—did not appear to be related.

As previously mentioned, a major innovation planned for the 1980 census was the local review program. Its purpose was to provide detailed census counts and maps to the local authorities for them to check against their records; any errors in census materials or housing counts indicated by this check were to be reviewed and the appropriate corrections made. On June 11, 1976, the Bureau wrote to the mayor of Camden, explaining this program in detail so that available local information for checking against the counts could be collected in advance. On July 19, the preenumeration address list count of housing units for

each block of the city was transmitted to the city officials. During August, Camden provided the results of its field canvass of housing units in about 20 percent of the city blocks. The Census Bureau undertook an on-the-ground check in response to this information, but it shortly became clear that these data were faulty and, thus, the city withdrew them. The Bureau next received from Camden on October 26, 1976, the results of a more precise canvass of the city blocks. The Bureau checked these data against census records and a field reconciliation of significant differences was performed. As a result of this field check, 7 occupied housing units with 16 persons were added to the census count.

In the second phase of the local review program, city officials were provided, on January 17, 1977, with preliminary counts of housing and population for each city block in Camden. At this stage the population stood at 87,305, but after all field work was completed, the population was 90,292, still significantly below the 1970 population of 102,551. The city was asked to complete its review and inform the Census Bureau of any errors in the counts within 10 working days, but at the request of the city, the review was extended an additional 5 days.

In response to the preliminary counts from this pretest and to the subsequent announcement, also in January 1977, that the Census Bureau's 1975 population estimate for the city was 89,214, Camden claimed that the counts and the estimate were in error. The Camden pretest was the subject of hearings held in May 1977 before the Subcommittee on Census and Population of the House Committee on Post Office and Civil Service. In an effort to enjoin the use of the pretest figures or the 1975 estimate in determining the city's participation in Federal and State grant and assistance programs, Camden filed suit in the U.S. District Court for New Jersey on September 2, 1977. Since it had fallen below the 100,000 population mark, the city feared that it would lose its status as a prime sponsor in the Comprehensive Employment and Training Act (CETA) program. The Census Bureau eventually submitted the 1975 estimate to the Office of Revenue Sharing for use in the General Revenue Sharing Program.

On March 28, 1980, the Camden suit was dismissed by mutual agreement, with the city stipulating that it had sustained neither loss nor injury as a result of the 1976 pretest. The Comprehensive Employment and Training Act had been amended to provide that a jurisdiction would not necessarily lose its status just because it dropped below 100,000 persons. The city could continue as a prime sponsor as long as it could demonstrate its effectiveness in carrying out programs under CETA. Camden also was informed that per capita income was a greater consideration than population in the revenue-sharing formula.

Navajo Reservation Pilot Study

In September and October 1976, the Bureau conducted a test of coverage-improvement procedures in three chapters of the Navajo Indian Reservation.¹⁹ The focus of the test was on ways to improve coverage and the accuracy of data on American Indians. Federal agencies and members of the American Indian community, in the regional meetings mentioned, had strongly

¹⁹The reservation at the time of the study had 102 political units, or chapters. The three chapters involved in the test, which were located in the northeastern Arizona and northwestern New Mexico sections of the reservation, contained about 7,900 people. The reservation also extends into southeastern Utah.

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emphasized the need for more accurate data on that population. The study explored the possibility of using special sources such as population registers to improve the count and examined other tools and procedures designed to enhance coverage, e.g., improved geographic aids and methods of recruiting indigenous enumerators.

The test involved three phases: (1) a complete enumeration of the three chapters, (2) matching the results from the enumeration to the Navajo population register maintained by the Bureau of Indian Affairs (BIA), and (3) the reconciliation of a sample of nonmatched cases through office and/or field followup, that is, checking to see if persons on the register but not enumerated, or persons enumerated but not on the register, for the three chapters should have been counted.

As a result of this test, it was decided not to use the Navajo population register as a coverage improvement device in 1980. While its use resulted in some improvement in the count, it was also time-consuming, very costly, and included a substantial number of persons who should not have been on the register due to death or because they had moved off the reservation.

The study involved the use of low-altitude (large-scale) aerial photographs and improved road maps provided by the Bureau of Indian Affairs (instead of the small-scale county highway maps used to conduct past censuses of that reservation). High-quality maps are essential to the conduct of an accurate census; they aid enumerators in completing their two most important functions—finding and counting all persons and housing units and allocating them to the correct geographic area.

The results of the test indicated that low-altitude aerial photography could help improve census coverage, particularly in areas for which road maps were inadequate, which were sparsely populated, and/or which had rough terrain. The photographs were especially useful for identifying the location of isolated housing units and for showing small roads and trails that did not appear even on the improved road maps.

The study also resulted in recommendations on enumerator recruitment and training and enumeration procedures and materials, some of which were subsequently included in the 1980 census. In particular, the study provided valuable experience in seeking assistance from and working cooperatively with the tribal government to improve the count.

Rural Relist Test

The Rural Relist Test was conducted in the late winter and spring of 1977 in the same Southern counties in which the Rural Listing Test was conducted. The purpose of the test was to see which listing or "prelisting" method would aid in preparing the more complete address mailing list for 1980 census areas where a commercial list was not available. Under the proposed "early" prelist, listing for the 1980 census would have been conducted in the spring of 1979, with an advance post office check in the summer of 1979 and another post office check in March 1980. Under the proposed "late" prelist, listing would have been conducted in January 1980, followed by the March 1980 post office check.

The evaluation of the "early" and "late" listings led to much the same results as in the Travis County test: a late listing would provide better coverage, but the difference could be offset by

conducting an advance post office check in concert with an early listing. The former was the approach chosen for 1980.²⁰

In addition to the major study resulting from the test, management (motion and time) studies provided data for the possible establishment of a piece-rate payment and time values (per listed unit) for use in developing budget estimates and staffing requirements for the 1979 prelist operation.

Oakland, CA, Pretest

Oakland, CA, was chosen as the site for the third major test census. It had a suitable population size (333,000 at the time) and there were substantial Black, Spanish-origin, and Asian and Pacific American populations. The area had a number of hard-to Enumerate areas in 1970. Finally, a commercial mailing list was available, as were the means to assign geographic codes to the addresses for the entire city by computer.

The major purpose of the test, as in Travis County and Camden, was to study field-collection methodologies and organization, including certain coverage-improvement techniques. In addition, several new questionnaire content items were tested, among them alternative versions of the Spanish-origin and "race" questions. Census Day was April 26, 1977; the district office opened in early February and closed the end of October, approximately 2 months behind schedule.

Three questionnaires were used in the Oakland test: two short-form versions that were each mailed to about 40 percent of the households and a long form that was mailed to about 20 percent of the households. One of the short forms contained "race" and Spanish-origin questions that were similar to those used in Travis County and in Camden, but the other included a new version of the race item and a new general ethnicity query that combined elements of the short-form Spanish-origin question and the long-form ethnicity item. The Oakland long form contained these two new questions.

4. Race Fill one circle.	<input type="radio"/> White <input type="radio"/> Black or Negro <input type="radio"/> Indian (Amer.) Print tribe _____	Print specific race: <input type="radio"/> Asian or Pacific Islander _____
If "Asian or Pacific Islander," specify, for example, Chinese, Filipino, Hawaiian, Indian (Asian), Japanese, Samoa, etc.	<input type="radio"/> Other _____	
7. Is this person's origin or descent – If "Spanish/Hispanic," specify, for example – Chicano, Cuban, Mexican, Mexican-American, Mexicano, Nicaraguan, Puerto Rican, Spaniard, Venezuelan, etc. If "European, except Spaniard," specify, for example – English, German, Hungarian, Irish, Italian, Lithuanian, Polish, Swedish, Ukrainian, etc. If "Other," specify, for example – Brazilian, Chinese, Jamaican, Korean, Lebanese, Nigerian, Vietnamese, etc.	<input type="radio"/> Afro-American <input type="radio"/> Spanish/ Hispanic _____	Print specific origin: <input type="radio"/> European, except Spaniard _____
	<input type="radio"/> Other _____	

There were a few other major differences in wording and format from the Travis and Camden questionnaires and two other significant modifications: The "head of household" concept in the relationship question was replaced by a reference person (the person in column 1) and three new questions on housing quality (cracks or holes, peeling paint, and broken plaster) were added.

²⁰The planned advance post office check of prelist addresses was cancelled, however, when the listing operation fell behind schedule in 1979 (see Ch. 3, "Geography, Addresses, and Questionnaire Printing and Labeling"). To compensate for this, some prelist areas were recanvassed in 1980, some time after Census Day (see Ch. 5, "Field Enumeration").

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H28a. Does this house (apartment) have open cracks or holes in the interior walls or ceiling? <i>(Do not include hairline cracks)</i>		
<input type="radio"/> Yes	<input type="radio"/> No	
b. Does this house (apartment) have holes in the floors?		
<input type="radio"/> Yes	<input type="radio"/> No	
H29. Is there any area of broken plaster on the ceiling or inside walls which is larger than the size of this page?		
<input type="radio"/> Yes	<input checked="" type="checkbox"/>	<input type="radio"/> No
H30. Is there any area of peeling paint on the ceiling or inside walls which is larger than the size of this page?		
<input type="radio"/> Yes	<input type="radio"/> No	

The Bureau tested the new "race" and ethnicity questions in Oakland to determine if they could be used in the 1980 census. A number of factors had led the Bureau to reevaluate its use of the three items on race, Spanish origin, and ethnicity that had been used in earlier pretests and to test the two new ones: (1) the need to utilize questionnaire space effectively, (2) the requirement that the Bureau and all other Federal agencies provide data for four race categories (i.e., White, Black, American Indian and Alaska Native, and Asian and Pacific Islander) and for the Spanish-origin population according to an OMB directive providing guidelines on ethnic and racial statistical reporting, (3) the problems with the three questions that were encountered in the Travis County, Camden, and National Content tests. Among these problems were the misunderstanding of the questions and the resultant high nonresponse rates, and the double coverage of Spanish-origin people in both the Spanish-origin and ethnicity items, (4) the recommendations and concerns expressed by several of the Bureau's advisory committees, and (5) the numerous requests from ethnic groups and local governments for 1980 census data on a large number of ethnic groups.

The old version of the race item listed eight specific categories—White, Black, American Indian, and five Asian or Pacific Islander groups. The item also included an "Other" category for which people were asked to write in their specific race; respondents who marked "American Indian" were asked to give their specific tribe. The new version of the race item replaced the five specific Asian categories with one category, "Asian or Pacific Islander," and space for a written entry of a specific group. The Committee on the Asian and Pacific Americans Population expressed concern about this new approach, since it would have provided only sample, and not 100-percent, counts for the individual Asian and Pacific Islander groups. Questions were also raised about the public's understanding of the term "Asian and Pacific Islander."

In the new ethnicity question, respondents were asked to mark one of four broad categories—"Afro-American," "Spanish/Hispanic," "European, except Spaniard," and "Other." If the respondents marked one of the latter three categories, they were to print their specific origin. The new question was designed

to replace the short-form Spanish-origin question, which allowed those who were Hispanic to mark a specific Hispanic subgroup (Mexican-American, Puerto Rican, or Cuban) or to fill the circle for "Other Spanish," and the long-form ethnicity question which provided 21 ethnic categories, including "Other." The Census Bureau's Spanish-origin advisory committee registered criticism of the new approach because (1) while it would have provided 100-percent counts of the general category "Spanish/Hispanic," it would have only allowed sample counts for the Spanish-origin subgroups; such information would have been available only at the tract level and above, not for blocks; and (2) they believed that some Hispanics would not identify themselves in the Spanish/Hispanic category.

Although, after editing and followup, the old and new versions of the race item yielded about the same proportion of Asian and Pacific Islanders, a considerable proportion of the Asian and Pacific Islander responses in the new version were incomplete or inconsistent. With regard to answers to the ethnicity item, the new version resulted in substantial inconsistency or incomplete reporting of Spanish-origin persons. However, the Spanish-origin item (old version) had a high nonresponse rate and "suspected" misreporting in the "Central and South American" category. The Bureau concluded, however, that these difficulties with the Spanish-origin item could be overcome with modifications to the item. After evaluating the results of the new race and ethnic items in Oakland, the Bureau decided not to use the new versions but to resume the three-question approach that had been used in previous pretests. However, the final versions of these three questions in the 1980 questionnaire were different from those used in Travis County and Camden.

The mailout/mailback census method was employed in Oakland, CA, as in Travis County and Camden, but the mail-return rate of 56.8 percent was lower than expected. To test their effectiveness in increasing mail response, reminder cards were mailed only to housing units in even-numbered enumeration districts so that they would arrive 2 days after Census Day. The test led to a conservative estimate that mail response could be improved by as much as 5 percent by using reminder cards, but it was not believed that the mailing cost would be offset by savings in reduced followup. A further study concluded that selective mailing to certain types of structures (single- or multiunit) or to households that received a certain type of form (short or long) would not be useful. Reminder cards were not used in 1980.

Spanish-language questionnaires were made available under the same arrangements that were used in Travis County and Camden, and the number of requests for these forms—only 94—was low, consistent with the earlier tests.

Telephone and walk-in assistance centers were again used to help respondents fill out their questionnaires; mobile vans, which had been tried in Travis County and, to a limited degree, in Camden, were not utilized because of the difficulty in publicizing their locations. About 86 percent of all contacts were through the telephone center and the remainder were divided among the 11 walk-in centers, which were in various locations throughout the Oakland area, including minority community centers and organizational offices. Over 62 percent of all public contacts were made on or before Census Day. (Households received their questionnaires 4 days before Census Day.)

Enumerators in the first phase of followup (of nonrespondents) were paid on a piece-rate basis. In Travis County and Camden

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they were paid hourly, but time studies were conducted in those two tests and the Oakland piece rates were based upon these. Piece rates had been used in 1970, with pay by the hour as an alternative where needed.

A complete-count committee was set up in Oakland and, drawing upon the Camden experience, formal guidelines for the conduct of the committee were implemented. The guidelines explained the roles of the committee members, the chairperson, the mayor, and the Bureau's district office and headquarters personnel. Monthly meetings beginning 4 months before Census Day and running for 2 months afterward were called for, but because of the late formation of the Oakland committee, the first meeting was not held until shortly before Census Day.

As in the Travis County and Camden pretests, there was a study of the effect on coverage of conducting a recheck of units classified vacant or nonexistent during the first phase of followup. Results of the Travis and Camden pretests showed the effectiveness of an extensive followup of units initially classified as vacant or nonexistent by the first followup enumerator. As part of each of these pretests, a post office match procedure was simulated as a means of limiting the followup workload. The match involved a comparison of the occupancy status as reported by the nonresponse enumerator and the post office; cases which indicated a possible enumerator error were then designated for reinterview. Results from the Travis County and Camden tests indicated that the post office match procedure would correct some of the misclassification errors while providing a reduction in followup workload. Therefore, it was decided to implement the post office match in Oakland as part of the census process and measure the methodological and procedural results. The match was conducted by comparing vacant and nonexistent classifications made by enumerators in the first followup with questionnaires returned as vacant or nonexistent during the postal casing check. Those cases that did not match were reinterviewed during the second followup.

The results of the study showed that an estimated 1.2 percent of all occupied housing units were incorrectly classified as vacant or nonexistent by enumerators in the first followup. Of those units classified as vacant by the enumerator, an estimated 12.7 percent were actually occupied housing units, while an estimated 7.0 percent of the deleted units were actually occupied. Had there been no followup of vacant and deleted units, the classification errors would have caused an estimated 0.81-percent undercount of the population. As a result of the study, a 100-percent followup of vacant and deleted units was deemed preferable to a followup preceded by a match between enumerator and post office classifications (this matching was designed to limit the followup workload). The post office matching did not reduce the followup workload sufficiently to offset the cost of the matching. Furthermore, the post office match eliminated too many units needing followup.

An innovation was introduced into the content edit scheme for Oakland (and eventually implemented in 1980): short- and long-form questionnaires were edited separately by different clerks to improve production and quality of work. In 1970 and in the previous pretests, the same clerks edited both short and long forms.

The mailing list for the Oakland pretest was created much as in Travis County and Camden by the purchase of a commercial mailing list, which underwent three postal checks and a precan-

vass by census enumerators. It was not necessary to conduct a prelist operation, since the entire test area was covered by a commercial mailing list.

As in Camden, an effort was made to evaluate the potential for improving coverage when the purchased mailing list for 1980 was merged with the final 1970 address register for Oakland. The results of the study (which did not involve an actual merging of the lists) showed that the count of occupied housing units would have been improved by about 0.7 percent by such a merge.

A number of management studies undertaken during the Oakland pretest evaluated operating procedures and established standard times to be used in determining budget estimates and staffing requirements. Operations studied (and for which standard times were issued) included the manual geocoding of addresses in the district office, the check-in of questionnaires and the edit of the item on the number of units at an address, the content edit of mail-returned questionnaires, the preparation of ED maps, telephone followup operations, the check of nonhousehold source (driver's license) lists, and preliminary population and housing-unit counts. Management studies of field operations provided data for the calculation of piece-rate payments. Standard times were issued for precanvass, the first and second followups, and the special place enumeration.

A trial version of a test to aid in the selection of nonsupervisory field personnel was first used in the Oakland pretest. The Census Bureau's desire to develop valid selection procedures stemmed in part from the goal of reducing the census undercount. It was felt that improving the quality of the census workforce would aid in improving the quality of the census. The Census Bureau began work on field employee selection procedures in December of 1975 when written descriptions of all census jobs were reviewed. Then, job incumbents and their supervisors were interviewed during the Travis County, Data Collection Unit, Camden, and Oakland pretests (and subsequently in the Richmond dress rehearsal). Through these interviews, detailed information on the specific tasks performed by census workers in each job was collected, and the knowledge, skills, abilities, and personal characteristics required to perform census work were identified.

When all of the information collected had been analyzed, the next step was the construction of a multiple-choice Field Employee Selection Aid Test—General (FESAT-G), an experimental test consisting of 7 subtests and containing 154 items. The experimental FESAT-G was administered to over 4,000 job applicants during the Oakland pretest. Performance data were collected and evaluated for enumerators in the first followup and for edit clerks to see how performance on the test was related to performance on the job.

Enough information was obtained to shorten the FESAT-G to 6 subtests and 65 items. This refined and modified version of the FESAT-G was used in the Richmond and lower Manhattan dress rehearsals.

Dress Rehearsal Program

The purpose of the dress rehearsal program was to test all the various operations planned as part of the 1980 census to ensure that they would actually work as part of a full-scale enumeration. After the dress rehearsal, only materials and procedures that did not appear satisfactory for 1980 would be revised.

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A number of criteria were considered in planning the dress rehearsal program. It was believed that:

1. Every type of district office which was planned for the 1980 census—conventional, decentralized, and centralized—should be included in the dress rehearsal. One reason for doing this was the need to start preparing procedural manuals and training guides for each type of office. (Conventional offices were in areas of the country where the door-to-door method of enumeration would be used; decentralized offices were chiefly in rural and suburban areas where the mail-census method was employed, and centralized offices were in large cities in mail-census areas.)
2. Every operation planned for the 1980 census should be conducted in the field during the dress rehearsal.
3. The centralized and decentralized offices should be contiguous so that there would be an opportunity to learn something about the problems encountered when two offices operate adjacent to each other—i.e., problems in recruiting, publicity, post office operations, etc.
4. The district offices should operate with full management staffs.
5. The district offices should operate under regional office control without direct intervention from headquarters.
6. A "pyramidal" training program similar to the one planned for 1980 should be carried out. The headquarters staff should train regional coordinators, who would in turn train district office management personnel; the latter would train first-line supervisors, who would train production employees.

With these objectives in mind, the Census Bureau selected three areas in which to conduct dress rehearsal activities and officially announced their locations in late July 1977: the Richmond, VA, area, encompassing the city of Richmond together with Chesterfield and Henrico Counties; La Plata and Montezuma Counties, CO; and that part of New York's Manhattan Borough south of Houston Street (lower Manhattan).

A number of working groups were established within the Bureau in May 1977 to discuss issues regarding procedures to be followed in the dress rehearsal program. These groups covered such topics as office and field operations in the district offices, coverage-improvement techniques, the post-enumeration survey, prelist activities, special places, geography, personnel matters and public relations, processing activities, clerical processing, data products, and the enumeration of American Indians. These working groups made formal written recommendations on subjects which required decisions by the Dress Rehearsal Planning Committee (an interdivisional group comprised of senior staff members of each participating census division; a similar group operated during the pretests) or by higher levels at the Bureau. The planning committee met weekly from April 1977 to November 1978, and normally discussed a half dozen or so operational subjects at its meetings.

Richmond, VA, Area

The Richmond area was selected as the principal site to test-run mail-census procedures; it was chosen because it contained

a substantial minority population (primarily Black), the population size (about 519,000) was deemed adequate for dress rehearsal purposes and was within the budgetary constraints, and certain geographic aids (GBF/DIME files) were available. Another advantage of Richmond was that, for media purposes, it was "freestanding"—it did not rely on the media of a larger city nearby. This ensured that the level of publicity would approach that which would be realized in 1980. Census Day was April 4, 1978. A centralized district office covering a portion of the city of Richmond opened on January 3; the district office manager was selected from among Bureau headquarters staff. A decentralized office covering the balance of the area also opened on January 3; as would be typical for decentralized offices in the census, a non-Bureau employee was selected as district office manager. The centralized office closed in mid-September and the decentralized office later that month, about 5 and 8 weeks behind schedule, respectively. This was the only test of decentralized procedures prior to the 1980 census.

The district office temporary staff of supervisors, crew leaders, enumerators, and office clerks was recruited through paid publicity rather than a referral system. All workers were paid hourly, except for first- and second-phase followup enumerators in the centralized office and first-phase followup enumerators in the decentralized office, who were paid on a piece-rate basis. As an experiment, a bonus payment system was used for enumerators in the first phase of followup in the centralized office. Enumerators who produced 75 or more acceptable cases a week (of which at least 11 had to be long forms) without working overtime were paid \$25 over and above their piece rate. The bonus system was instituted because enumerators' production in the pretests had been lower than expected; the first phase of followup was not completed on schedule in any test. However, the bonus payment system did not work sufficiently well to warrant its use in 1980. Under the Fair Labor Standards Act (FLSA), piece-rate enumerators were paid at least minimum wage for the dress rehearsal; for the 1980 census, the Bureau was exempted from FLSA provisions. Pay rates in the centralized office were slightly higher than in the decentralized office, a situation that resulted in some adverse publicity during the conduct of the Richmond dress rehearsal. Because of the low unemployment rates in the suburban counties, there was some difficulty in filling the followup enumerator assignments in the decentralized office.

A new "systems" approach to training in the dress rehearsal differed from the traditional verbatim training, used since the 1950's, in that it was performance- and learner-oriented, whereas the traditional method emphasized the learning of specific information imparted by a trainer. The systems approach was suggested by the Civil Service Commission,²¹ which the Bureau had asked to review its training program and which issued a preliminary report in March 1977. The systems approach made greater use of visual aids and workbooks, and emphasized individual instruction to meet the goal of uniformity of performance. The trainees learned principally by doing, though there was still a need for lectures and for formal classroom training.

As mentioned above, the mailout/mailback census method was used in the Richmond area. Address mailing lists were created

²¹Later renamed the Office of Personnel Management.

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in two ways. For the city of Richmond, address lists were purchased from commercial vendors. These addresses were checked first in the advance post office check on November 9, 1977, when postal workers added, deleted, and corrected listings. Then census enumerators checked the list once more in February 1978 in the "precanvass" operation, and postal workers again updated addresses on March 14 and at the time of delivery of the questionnaires on March 31. In Henrico and Chesterfield Counties, the address lists were created by census enumerators in a "prelist" operation. The prelist office (which later became the decentralized district office) opened in August 1977 and the listing occurred from September 15 to October 7. Prelist addresses were keyed into the computer so that preprinted address registers could be generated (in 1970, the address books for prelist areas were handwritten). Prelist addresses also underwent the advance post office check and two March updates by the Postal Service. The prelist went smoothly, production was high, and there were no major problems. However, the area prelisted was not really typical of most of the more rural areas where listing would occur for the 1980 census, in that about 80 percent of the addresses in the suburban counties had house numbers and street-name addresses, rather than rural route designations.

Most of the coverage-improvement devices used in the earlier tests were employed again in the dress rehearsal. These included precanvass, the vacancy/delete check, the nonhousehold sources check, Spanish-language questionnaires, telephone and walk-in assistance centers, local review, the option of having team enumeration for selected areas, and "casual count," which was directed at counting persons with no fixed residence. A new procedure used for the first time in the dress rehearsal was the "dependent household roster check." When households returned incomplete questionnaires, they were recontacted by telephone or personal visit, and read the roster of individuals given for the household at the time of enumeration to determine whether it was complete and accurate. This procedure was used in the 1980 census.

The mail-return rate for the dress rehearsal was 78.9 percent—74.1 percent for the centralized and 80.9 percent for the decentralized area; this response was significantly higher than the mail-return rates in the Camden and Oakland tests. The improved mail response can be attributed to a number of steps instituted by the Bureau, e.g., the involvement of a volunteer advertising agency, an effective complete-count committee for Richmond city, and an aggressive Community Services Program. The advertising agency, whose services were obtained through the Advertising Council, ran a test campaign designed to determine the effectiveness of free public-service advertising (which was proposed for 1980) in motivating the public's response; this technique was then adopted for 1980. The multimedia effort was more extensive than the promotional campaigns for the pretests and appeared to contribute to the excellent mail-return rate. The establishment by the mayor of Richmond of a complete-count committee representing all segments of the city proved to be an effective public-relations tool in reaching the minority community in particular. The Bureau's Community Services Program, represented by two community services specialists, focused on projects that could be implemented by community organizations in the census area and on reaching persons at the grassroots level in order to (1) establish census credibility, (2) reduce hostility and apathy toward the census, (3) convince people to complete

and return their census forms, (4) publicize the census, (5) assist in recruiting of minority staff, and (6) determine the best locations for recruiting centers, questionnaire assistance centers, and "casual count" interview stations.

The questionnaires used in Richmond were not significantly different from those used in the pretests, but changes were incorporated reflecting what was learned in the earlier tests. The resultant product closely resembled the final 1980 census forms. Color was used on a census questionnaire for the first time as a device to improve the readability of the forms. Blue print was used on the cover, page 1 (instructions), and the back page; blue background fields were used to highlight the questions and person-column headings inside the questionnaire, where black print was used.

There were no tests of alternative question wording, and only one short form and one long form were used. A new sampling pattern, reflecting decisions made after the Oakland test, was introduced into the dress rehearsal. The 100-percent income question had been dropped and only the long form contained an income item. In order to collect better income (and other sample) data for small areas, it was decided that one-half the households in functioning governmental units with under 5,000 persons (based on the latest available Bureau estimates) would receive the long-form questionnaire, and one-sixth of the households in functioning governmental entities with 5,000 or more persons would receive the long form.²² In Travis County, Camden, and Oakland, the long form had been mailed to 20 percent of the households. (The small-area cutoff was lowered to 2,500 persons for the 1980 census.)

Changes were made to the "race," Spanish-origin, and disability questions, among others. The "race" item was expanded from the 9 categories used on one version in the Oakland test to 15, incorporating several specific groups for the first time—Vietnamese, Asian Indian, Guamanian, Samoan, Eskimo, and Aleut.²³

The Spanish-origin item was designed to highlight the response "Not Spanish," to reduce the nonresponse rate; the term "Central or South American" was deleted to eliminate misreporting in that category. (In the 1970 census and in pretests for the 1980 census, some respondents misinterpreted the "Central or South American" category to mean the central or southern parts of the United States.) Despite the design change, there was a high rate of nonresponse to this item in Richmond, and it was believed that the failure to answer was due primarily to the fact that non-Spanish persons had to read through a series of Spanish categories before responding to the "Not Spanish" category. Thus, some persons not of Spanish origin may not have realized that they, too, were supposed to answer the question. In addition to the high nonresponse rate, there was misreporting in the "Mexican-American" category in Richmond; some persons, who had marked a Spanish-origin category on the questionnaire, indicated in reinterview that they were not of Spanish origin. Many of these persons had scratched out "Mex." on the "Mex-American" category to indicate their origin as American.

²²In the Richmond area, there were no functioning governmental units, so two small unincorporated communities were designated for the 1-in-2 sample.

²³The last two categories were on a special questionnaire used only in Alaska in 1970, but were not included on the main questionnaire.

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The disability question was simplified to ask only about limitations in two areas—work and use of public transportation—whereas the Oakland test asked about limitations or prevention from engaging in six different activities.

For the dress rehearsal, another innovation was introduced into the scheme for editing the questionnaires—templates with instructions printed on them. When an edit clerk placed a template over the questionnaire, the respondent's answers showed through. Four templates were involved in editing the long form, and two for the short form. Having edit instructions imprinted on the template obviated having to use an instruction booklet, as in the pretests. This device proved workable and was improved for use in the 1980 census.

The dress rehearsal provided the first look at decentralized procedures during planning for the 1980 census, and significant changes in these were made as a result of the experience. In the edit area, procedures were redesigned to be somewhat more centralized. Whereas in the dress rehearsal, mail-return questionnaires were distributed to enumerators for editing in their homes (which caused control and logistical problems) as they had been in the 1970 census, for 1980 the edit of mail returns was done in the district offices. Another change for 1980 was the creation of the job of quality-control enumerator to check the followup enumerators' work; in the dress rehearsal, this task was assigned to crew leaders, but was not handled very successfully since they had so many other duties to perform. Also, as a result of the dress rehearsal experience, the two phases of followup assignment control—checking the quality of work by the enumerators and checking the returned questionnaires against the master address registers—were split for the census and handled by separate units.

Alternative procedures for conducting the post-enumeration survey (PES), which was planned as a major element of the coverage evaluation program for the 1980 census, were also tested in both the Richmond- and Colorado-area dress rehearsals. Post-enumeration surveys had been conducted as part of the coverage evaluation programs for the 1950 and 1960 censuses and involved interviewing a sample of households after the census and checking the list of names and addresses collected against census records to ascertain whether the individuals and housing units had been counted. Other coverage evaluation techniques (such as demographic analysis) can produce estimates of coverage for the national level and for certain characteristics (age, sex, race), but a relatively large-scale sample such as the PES is needed to produce coverage estimates for subnational areas and for socioeconomic characteristics. (For a detailed discussion of the 1980 census coverage evaluation program, see ch. 9.)

PES techniques had been tested in conjunction with the Oakland pretest. In both Oakland and in the dress rehearsals, alternatives for type of interview, sample design, sample size, questionnaire content, and techniques for estimating and reducing statistical bias were considered.

In Richmond and Colorado, a sample of blocks was selected and interviewers visited these blocks after the census offices had closed, listing all structures large enough to contain housing units. Interviews were conducted at all single-unit structures, at all units in small (10 or fewer units) multiunit structures, and at a sample of units in large multiunit structures in September and October 1978.

Two types of interviews were used. The first involved a "multiplicity" procedure wherein interviewers obtained a current household roster and the addresses of the household members on Census Day. Then names of specified relatives (such as children over 18 years old) and where they lived on Census Day were collected.

A second type of interview was employed at an independent sample of addresses. For each household, interviewers obtained a list of current residents and their Census Day addresses, and (using current occupants or neighbors) a list of Census Day residents of the sample address. Either list could be used in measuring coverage.

After the field work was completed, persons listed on the interview questionnaires were matched to census forms to determine if they had been enumerated in the census. Also, housing units were matched to listings in the address registers to determine if the housing units had been missed in the census.

Based in part on the dress rehearsal experiences, it was decided not to use the "multiplicity" type of interview in 1980. The approach finally used involved asking members of a household in the PES sample where they lived on Census Day. In cases where the PES-sample housing unit was vacant, or occupied by a different household on April 1, no attempt was made to reconstruct the household roster as of that date.

During the Richmond dress rehearsal, management studies were conducted in both centralized and decentralized offices to provide data for budget and staffing estimates for the check-in of questionnaires and the edit of the questionnaire item for the number of units at an address, for edit of the content of mail-return questionnaires, preliminary population counts, quality control of enumerator questionnaires, merge of followup and mail-return questionnaires, and address range checks. Studies of field operations (prelist and followup) provided information for budget and staffing estimates and data for establishment of piece-rate payments.

La Plata and Montezuma Counties, CO

Conventional enumeration procedures were examined for the first time since the 1970 census in a dress rehearsal census conducted in La Plata and Montezuma Counties, CO. Census Day was April 4, 1978, the same as for the Richmond, VA, area dress rehearsal. In the conventional method, postal carriers leave undressed Advance Census Reports (ACR's) at households prior to Census Day. The ACR is a combination cover letter, instruction sheet, and detachable short-form questionnaire that the householder is asked to complete and hold. Enumerators then go door-to-door, collecting the filled questionnaires and helping respondents complete them. In addition, the enumerators administer long-form questionnaires to a sample of households and transcribe the short-form information for these onto their long forms.

La Plata and Montezuma Counties (which had a total of about 40,000 people) were selected to test conventional, door-to-door enumeration procedures because these areas were typical of the kinds that would be enumerated in that manner in 1980—sparsely populated and large geographically, they contained American Indian reservations, national parks and forests, and resort areas. In addition, these counties had significant Spanish-origin populations. To perform a complete enumeration

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of the Ute Mountain and Southern Ute Indian reservations, small parts of Archuleta County, CO, and San Juan County, NM, were included.

A district office was established in the town of Durango and a local resident was hired as district office manager. The office opened in mid-February (a few days late due to the delayed arrival of furniture, materials, and supplies) and closed in early August, about 3 weeks behind schedule. Although some problems did arise, the enumeration went well overall and the conventional procedures planned for the 1980 census proved feasible.

A major problem area was that of recruiting and staffing. Recruitment got off to a slow start because much of the publicity material had to be written in the district office after it opened. There were high turnover rates for enumerators, especially during the regular enumeration phase, when the rate was over 70 percent. This was attributable in part to the lure of more lucrative jobs in resort areas.

The content of the regular questionnaires used in the Colorado-area dress rehearsal was the same as that in Richmond. As mentioned above, a decision was made prior to the dress rehearsals not to ask income on a 100-percent basis in 1980, so the income question tested in the pretest censuses was deleted from the dress-rehearsal short forms. In four towns in the Colorado test area with under 5,000 people, the long-form questionnaire (with the income questions) was used at 50 percent of the households.

An important component of this dress rehearsal was the use of a supplementary questionnaire for Indian-reservation households that contained at least one American Indian. Requests by Federal, State, and tribal officials for additional information on the unique living conditions on reservations prompted the Bureau to develop a special supplementary questionnaire for use in 1980. The Colorado-area dress rehearsal marked the first, and only, use of this supplementary questionnaire prior to the 1980 census.

The supplementary questionnaires, which contained 33 numbered items, were administered in addition to the short- or long-form regular questionnaires in households with at least one American Indian member. The first 10 items related to housing. The remaining 23 questions were to be asked of each individual in the household (whether that person was an Indian or not); the questions were on tribal affiliation, education, migration, health, employment, utilization of government programs, and income.

A good deal of knowledge was gained from the experience of enumerating Indian households in Colorado. It became evident that the administration of the supplementary questionnaire was time-consuming for the enumerator and burdensome for respondents, especially when the supplementary questionnaire was used at households that also received a long-form questionnaire. As a result of the Colorado experience, it was decided for 1980 to ask the supplementary questions only at reservation households that contained at least one American Indian, Eskimo, or Aleut, and which received a short-form questionnaire. Long-form (sample) households would not be given a supplementary questionnaire. Furthermore, based on results of the Colorado test and written comments from tribal governments, it was decided to reduce the number of items on this questionnaire.

Bureau planners also gained additional valuable experience about enumerating on reservations. Procedures to improve the enumeration, such as aerial photography, use of indigenous enumerators, and efforts to obtain the assistance of the tribal

governments were used. The enumeration of one reservation went rather well, while that of the other encountered some difficulties. The enumerator turnover rate was lower and the field work was completed earlier on the reservation where the Census Bureau was able to obtain the assistance of the tribal government in publicizing the recruitment effort.

Several of the coverage-improvement devices employed in mail census areas were also used in the conventional test area: Spanish-language questionnaires, coverage items on the questionnaire, the vacancy/delete check, and local review. Additionally, there were two major coverage-improvement checks that were not used in mail census areas. The first was a control on the quality of enumerators' coverage of housing units that consisted of an advance listing of a sample of 24 addresses in each ED by the crew leaders; these addresses were checked against the enumerators' listings, and if 2 or more addresses were missed, the work was deemed unacceptable and was sent for recanning. This procedure was employed in the dress rehearsal and in the 1980 census.

The second check was called the post-enumeration post office check (PEPOC). After Census Day, enumerators filled a "white card" for each listing they had entered in the address registers. This card was given to the appropriate post office to be matched against carriers' delivery routes. A "Post Office Report of Missing Address," or "blue card," was filled by the postal workers for each residence that appeared to have been missed by the census. In the district office, addresses on the "blue cards" were matched against the address registers to determine if the housing units were already enumerated. If any address could not be located in the registers, an enumerator was sent to the unit to fill a census questionnaire. For the dress rehearsal, the PEPOC was evaluated to measure the actual and potential yield of the program and to identify areas where procedural improvements could be introduced. The number of housing units added to the census as a result of the PEPOC in the dress rehearsal was 0.9 percent; however, during the PEPOC evaluation, it was found that other units could have been added had the procedures been followed correctly and had address searches for blue cards with insufficient address information been carried out. Thus, the potential add rate from the PEPOC was 1.4 percent, the same as the add rate for PEPOC in the 1970 census.

During the Colorado dress rehearsal, as in Richmond, management studies of field operations were conducted to provide information for budgeting and staffing estimates and for establishment of piece-rate payments. The operations observed were the advance listing of addresses, regular enumeration, and followup enumeration.

Lower Manhattan and the National Test of Spanish Origin

The Bureau originally intended to conduct its dress rehearsal program only in the Richmond, VA, area and in the two rural counties in Colorado. Members of the Bureau's minority advisory committees, however, noted that these areas did not contain significantly large Hispanic or Asian American populations and suggested that the Bureau test its procedures in an area with a diversity of minority persons. In response to that suggestion, the Bureau decided to conduct a further test in that part of New York city's Manhattan Borough south of Houston Street. Lower

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Manhattan was selected because it contained a variety of racial and ethnic groups—there were large Spanish-origin, Chinese, Italian, and Black populations among its nearly 119,000 people. Houston Street, which runs from the Hudson River almost to the East River, served to delineate a section of the city that could be recognized easily—an important consideration for publicity purposes.

Census Day in lower Manhattan was originally scheduled for September 12, 1978, but since the State of New York was holding its primary elections on that day as well, the Bureau decided to postpone Census Day for 2 weeks, until September 26. The district office was slated to close in late January 1979, but due to difficulties in conducting the field work, did not do so until late May.

The mailout/mailback census method was employed in this dress rehearsal, as it had been in the Richmond area, and address lists were prepared accordingly; a commercial list was purchased and updated by the post office and by the Bureau in its "precanvass" operation. The address list supplied by the commercial vendor was less complete and accurate than anticipated. Deficiencies in the list created problems for the advance post office check; some mail carriers, for instance, demurred at having to fill out cards for all the units that were missing, especially when large multiunit buildings had been left off the commercial list entirely. This experience led the Bureau to take several steps to rectify the situation, including allowing one "add" card to be completed for all units at one address and simplifying the printed instructions to the carrier.

Only 42 percent of the occupied households mailed back their questionnaires, the lowest mail-return rate in any of the pretest or dress rehearsal censuses. There were several possible reasons for this; a major one was that when a census is conducted for only a small section of a large metropolitan area, it is difficult to achieve sufficient attention from large daily newspapers and local, mainstream electronic media. That was the case in lower Manhattan, and, in addition, the major New York newspapers were not in print for much of the enumeration period, due to a strike by pressworkers.

The followup workload was especially large in the lower Manhattan dress rehearsal because of the low mailback rate; this factor, as well as a dearth of workers, caused delays in the completion of the followup operation. Throughout most of the enumeration period, the district office had problems recruiting and retaining enumerators. It was the Bureau's goal to employ only those qualified persons who lived within the test area, i.e., in lower Manhattan. This goal was established to assure the hiring of a workforce familiar with the area they were enumerating and to see if the district office could satisfy its hiring needs from within its own boundaries, rather than from outside, which would be discouraged in 1980. Because of the high rate of attrition among enumerators, the district office had to begin hiring persons from outside the test area, first from other parts of Manhattan, then from the other boroughs of New York City.

The Bureau also aimed to hire a work force representative of the racial and ethnic balance of lower Manhattan, and it was successful in this regard, except for the hiring of Chinese Americans. Enumerators who could speak Chinese were especially needed to work in Chinatown (which was in the test area), but an insufficient number of citizens of Chinese ancestry applied for jobs; consequently, the requirement that census workers be U.S.

citizens was waived. This waiver remained in effect for the 1980 census.

The short- and long-form questionnaires used in lower Manhattan were essentially the same as those used in the Richmond area, except for changes in the race, Spanish-origin, and language questions. The Bureau had found that the use of the label "Race" for questionnaire item 4 might be confusing to some respondents since item 4 lists national-origin groups such as "Japanese," "Guamanian," and "Vietnamese." The Census Advisory Committee on Population Statistics had raised objections to the term. Therefore, for the lower Manhattan dress rehearsal census, the word "Race" was dropped and the heading for the question was changed to "Is this person—." This change was adopted for the 1980 census as well.

About the time the lower Manhattan office opened, the National Test of Spanish Origin (NTSO) was concluded. The NTSO was designed and conducted in response to reporting errors in the Spanish-origin question in Richmond and compared answers for two alternative versions of the Spanish-origin question. One of the questions was new, and the other closely resembled the Spanish question used in Richmond (see fig. C).

Figure C. National Test of Spanish Origin Question Variants

"Richmond" Version	
7. Is this person's origin or descent — <i>Fill one circle.</i>	<input type="radio"/> Mexican-Amer. <input type="radio"/> Cuban <input type="radio"/> Mexican or Chicano <input type="radio"/> Other Spanish <input type="radio"/> Puerto Rican ----- <input type="radio"/> Not Spanish <input checked="" type="checkbox"/>

"Lower Manhattan" Version	
7. Is this person of Spanish/Hispanic origin or descent? <i>Fill one circle.</i>	<input type="radio"/> No, not Spanish/Hispanic <input type="radio"/> Yes, Mexican, Mexican-Amer., Chicano <input checked="" type="checkbox"/> Yes, Cuban <input type="radio"/> Yes, Puerto Rican <input type="radio"/> Yes, other Spanish/Hispanic

The new version of the Spanish-origin question was called the "lower Manhattan" version because it was also used in that dress rehearsal. The wording of this new question was especially chosen to emphasize the intent of the question. Also, the category "No, not Spanish/Hispanic" was positioned first in the question so that non-Spanish persons could readily respond without reading all the Spanish categories. The main purpose of this reformatting was to reduce the item nonresponse rate; it was expected that this change would also reduce the misreporting in the "Mexican-American" category.

In the NTSO, each variant questionnaire was sent to about 3,200 housing units in late July. The questionnaires were mailed out from and returned to the Bureau's Jeffersonville, IN, facility. There was no followup of nonresponding units.²⁴

²⁴ A mail-return rate of at least 50 percent was anticipated, based on the experience with the 1975 National Mail Income Pretest. If this return rate was achieved, the sample size would be sufficient to detect, with a 90-percent probability, a real difference of at least 5 percentage points in the proportion of nonresponses to the two Spanish-origin questions being examined. The actual mail-return rate was 50 percent.

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The results of the NTSO and of the lower Manhattan census showed that the new variant of the Spanish-origin item led to a significant reduction in the item nonresponse rate. In the NTSO, the nonresponse rate was 15 percent for the lower Manhattan version of the Spanish-origin item compared to 27 percent for the Richmond version; in the lower Manhattan census, the rates were 12 and 24 percent, respectively. Furthermore, a telephone reinterview of the NTSO respondents who reported that they were of Spanish origin suggested that the new version of the Spanish-origin item produced a more accurate count of these persons.

The language question was also altered for lower Manhattan. In Richmond, the item included a question on whether a person speaks a foreign language at home more often than English. To meet data needs of the Department of Education, and other Federal agencies, this question was replaced by one that asked "How well does this person speak English?" and three responses were provided: "Very well," "Well," and "Not well or not at all."

Examination of the test to aid in the selection of nonsupervisory field personnel FESAT-G continued in lower Manhattan.

Performance data collected in the Oakland pretest had already led to shortening and refining the FESAT-G. More data were collected in lower Manhattan on enumerators in the first followup and on edit clerks. Analysis and evaluation of the lower Manhattan data allowed a further refinement of FESAT-G. The final version of the test, which was administered to all of the nonsupervisory job applicants during the 1980 census, contained 54 items divided into 5 subtests.

In addition to refinements in the FESAT-G, analyses in lower Manhattan and previous tests produced several other selection aids used during the 1980 census: An application form, a reference check, and structured interviews.

A number of management studies were also conducted in lower Manhattan to evaluate procedures and to provide data for budget and staffing estimates. Among the operations observed were the corrections to address registers resulting from the precanvass operation, the content edit of mail-returned questionnaires, the followup of nonresponse units, and the followup of units designated as vacant or deleted.

Appendix 2A. Dates and Locations of Planning Meetings

LOCAL PUBLIC MEETINGS

Date	Place	Date	Place
10/20/74	New Orleans, LA	4/24/75	Boston, MA
12/5/74	Little Rock, AR	4/24/75	Cleveland, OH
12/17/74	Shreveport, LA	4/24/75	St. Louis, MO
1/6/75	Omaha, NE	4/25/75	Fargo, ND
1/17/75	Las Vegas, NV	4/28/75	Boise, ID
1/21/75	Milwaukee, WI	4/28/75	Madison, WI
2/11/75	Tallahassee, FL	4/29/75	Moscow, ID
2/14/75	Birmingham, AL	4/30/75	Detroit, MI
2/18/75	Nashville, TN	4/30/75	Portland, OR
2/19/75	Denver, CO	5/6/75	Philadelphia, PA
2/19/75	Memphis, TN	5/7/75	Baltimore, MD
2/27/75	Fresno, CA	5/8/75	New Haven, CT
2/28/75	Charlotte, NC	5/10/75	Albuquerque, NM
3/4/75	Kansas City, MO	5/12/75	Chicago, IL
3/4/75	Louisville, KY	5/12/75	Raleigh, NC
3/11/75	Sacramento, CA	5/15/75	Wichita, KS
3/12/75	Dallas, TX	5/16/75	Cheyenne, WY
3/12/75	Miami, FL	5/20/75	San Francisco, CA
3/12/75	Seattle, WA	5/20/75	Sioux Falls, SD
3/14/75	Atlanta, GA	5/21/75	Columbia, SC
3/19/75	Honolulu, HI	5/22/75	Cincinnati, OH
3/19/75	Salt Lake City, UT	5/22/75	Phoenix, AZ
3/19/75	Wilkes-Barre—Scranton, PA	5/23/75	Billings, MT
3/20/75	New York, NY	5/27/75	Houston, TX
3/25/75	Albany, NY	5/28/75	Des Moines, IA
3/25/75	Washington, DC	6/4/75	Syracuse, NY
3/26/75	Newark-Jersey City, NJ	6/5/75	Charleston, WV
4/8/75	Bakersfield, CA	6/6/75	Trenton, NJ
4/8/75	Oklahoma City, OK	6/17/75	Lewiston, ME
4/9/75	Tulsa, OK	6/19/75	Burlington, VT
4/10/75	Poughkeepsie, NY	6/23/75	Dover, DE
4/11/75	Los Angeles, CA	6/24/75	Concord, NH
4/15/75	San Diego, CA	6/25/75	Providence, RI
4/16/75	Pittsburgh, PA	6/28/75	Jackson, MS
4/22/75	Harrisburg, PA	6/30/75	Anchorage, AK
4/22/75	Indianapolis, IN	7/9/75	Richmond, VA
4/23/75	Minneapolis, MN		

PROFESSIONAL ASSOCIATION MEETINGS

Date	Association	Place
11/20/74	Federal Statistics Users' Conference	Washington, DC
4/16/75	American Society of Planning Officials	Vancouver, Canada
4/30/75	Bank Marketing Association	Philadelphia, PA
5/31/75	Association for Public Opinion Research	Chicago, IL
6/10/75	Special Libraries Association	Chicago, IL
7/2/75	American Library Association, Subcommittee on Census Data	San Francisco, CA
7/5/75	National Education Association	Los Angeles, CA

Appendix 2A. Dates and Locations of Planning Meetings

8/24-28/75	Urban and Regional Information Systems Association	Seattle, WA
8/27/75	American Statistical Association	Atlanta, GA
8/27/75	American Sociological Association	Atlanta, GA
9/3/75	American Political Science Association	San Francisco, CA
10/9-10/75	American Institute of Architects	Washington, DC
10/16/75	Southern Regional Demographic Group	Atlanta, GA
10/21/75	Association for University Business and Economic Research	Williamsburg, VA
10/25/75	American Institute of Architects	Boston, MA
10/28/75	American Institute of Planners	San Antonio, TX
11/7-8/75	American Institute of Architects	Washington, DC
11/16/75	American Public Health Association	Chicago, IL
11/19/75	Social Science History Foundation	Ann Arbor, MI
12/30/75	American Economic Association	Dallas, TX
4/30/76	Population Association of America, Inc.	Montreal, Canada
5/2/76	American Institute of Architects	Philadelphia, PA
6/4/76	Life Insurance Marketing and Research Association	Hartford, CT

STATE AGENCY MEETINGS

Date	States	Place
11/21/74	Delaware, Maryland, Virginia	Annapolis, MD
12/11/74	Kentucky, Ohio, Tennessee	Lexington, KY
3/14/75	Alaska, California, Oregon, Washington	Sacramento, CA
3/19/75	Hawaii	Honolulu, HI
3/25/75	District of Columbia	Washington, DC
6/19/75	Arkansas, Kansas, Missouri, Nebraska	Kansas City, MO
7/17/75	Oklahoma, New Mexico, Texas	Austin, TX
7/25/75	Georgia, North Carolina, South Carolina	Atlanta, GA
8/14/75	Arizona, Colorado, Nevada, Utah	Phoenix, AZ
9/5/75	Iowa, Minnesota, North Dakota, South Dakota	Bismarck, ND
9/16/75	Maine, New Hampshire, Vermont	Montpelier, VT
10/15/75	Connecticut, Massachusetts, New York, Rhode Island	Hartford, CT
11/6/75	New Jersey, Pennsylvania, West Virginia	Trenton, NJ
11/10/75	Alabama, Florida, Louisiana, Mississippi	New Orleans, LA
11/19/75	Idaho, Montana, Wyoming	Helena, MT
12/5/75	Illinois, Indiana, Michigan, Wisconsin	Lansing, MI

1980 CENSUS USERS CONFERENCES

Date	Place
9/11/79	Detroit, MI
9/12/79	Chicago, IL
9/25/79	Atlanta, GA
9/26/79	Miami, FL
10/9/79	Dallas, TX
10/10/79	Kansas City, MO
10/16/79	Los Angeles, CA
10/16/79	Denver, CO
10/17/79	San Francisco, CA
10/17/79	Phoenix, AZ
10/18/79	Seattle, WA
11/13/79	Boston, MA
11/26/79	Washington, DC
11/28/79	New York, NY
1/17/80	Philadelphia, PA

SUMMARY TAPE USER MEETINGS

Date	Group	Place
11/14/74	Private sector users	Chicago, IL
12/12-13/74	Academic users	Atlanta, GA
2/20-21/75	Regional, State, and local government users	Albuquerque, NM

Appendix 2B. General and Results Memorandums of the Pretest and Dress Rehearsal Censuses

Because of the tentative and preliminary nature of many of the 1980 census results memorandums, their distribution outside the Bureau was essentially limited to technicians requesting specific memorandums useful to their research work. Users of the results memorandums should understand that these documents were prepared for internal office use with the aim of circulating information among Bureau staff members as promptly as possible. They, therefore, did not undergo the careful review and clearance normally associated with published census

evaluation documents. The opinions, conclusions, and recommendations presented in them reflect essentially the thoughts of certain staff members at a particular point in time and should not be interpreted as statements of Bureau position.

The titles of some of the memorandums have been slightly altered to give a better indication of the subject or have been shortened to avoid redundancy. Authors of the general memorandums are not given here; some of the results memorandums do not indicate who the author is.

SAN BERNARDINO COUNTY, CA, SPECIAL CENSUS

General Memorandums

1. "Description of Test Objectives and Plans," April 7, 1975.
2. "Time Schedule," April 9, 1975.

Results Memorandums

1. "Data Communications Network: Terminals and Central Computer Access," Alex Listoe and Sheldon Rubin, October 8, 1975.
2. "Telephone Reconciliation for Mobile Home Sales Lots," Richard G. Knapp, August 27, 1975.
3. "Test of Rural Block Identification and Numbering," Russell R. Clements, August 28, 1975.
4. "Field Report on Debriefing of Regional and Local Officials," Stanley D. Matchett, July 31, 1975.
5. "Observations on Terminals and Local Area Review," David L. Word, September 11, 1975.

SALEM COUNTY, NJ, INCOME PRETEST

General Memorandums

1. "Initial Test Design...," January 23, 1975.
2. "Final Plans...," March 10, 1975.
3. "Examples of Public Use Forms," April 21, 1975.

Results Memorandums

1. "Preliminary Mail Response Rates," May 16, 1975.
2. "Final Mail Response Rates," September 10, 1975.
3. "Evaluation of Income Statistics Collected on the Four Questionnaires," George Patterson and Roger Herriot, November 14, 1975.

NATIONAL MAIL INCOME PRETEST

General Memorandums

1. "Plans for the Pretest of Income Questions," April 18, 1975.
2. "Revised Starting Dates...," June 3, 1975.

Results Memorandums

1. "Preliminary Mail Response Rates," June 10, 1975.
2. "Disposition of Mail Returns and Nonresponse Cases," John Bushery, July 7, 1975.
3. "Final Mail Response Rates," Sherry Courtland and Jean Foster, October 14, 1975.
4. "Evaluation of Income Statistics Collected on the Four Questionnaires," George Patterson and Roger Herriot, March 24, 1976.

Appendix 2B. General and Results Memorandums of the Pretest and Dress Rehearsal Censuses

RURAL LISTING TEST

General Memorandums

1. "Description of Test Objectives and Plans," January 23, 1975.
2. "Schedule of Key Dates and Activities," April 23, 1975.

Results Memorandums

1. "Results of Field and Postal Service Activities," January 30, 1976.
2. "Postal Service Hours Claimed...," Maria E. Urrutia, March 31, 1976.
3. "Results of the Coverage Quality Control Operation," Deloris Higgins and Richard Blass, February 4, 1977.
4. "Results and Analysis...," James Dinwiddie, November 14, 1977.

PIMA COUNTY, AZ, SPECIAL CENSUS

General Memorandums

1. "Description of Test Objectives and Plans," October 16, 1975.
2. "Reverse Record Check and Evaluation Study of Flashcard Usage," September 18, 1975.

Results Memorandums

1. "Preliminary Results of Reverse Records Check and Evaluation Study on Flashcard Usage," Steve Willette and Susan Miskura, January 23, 1976.
2. "Debriefing of City, County, and Bureau Personnel," Lincoln Steigerwalt, February 18, 1976.
3. "Remote Terminal Data Transmission Test," Alex E. Listoe, May 21, 1976.
4. "Final Results of Reinterview Study to Evaluate Flashcard Usage," John S. Linebarger, September 2, 1976.
5. "Final Results of the Record Check Operations," John S. Linebarger, September 2, 1976.

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1. "Description of Test Objectives and Plans," November 13, 1975.

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1. "Phase 1—Geocoding Addresses for Columbus, Ohio by ADMATCH," Rockwell Livingston, November 19, 1975.
2. "Phase 1—Evaluation of Two Geocoding Systems and a Commercial Address File," Charles D. Jones, June 15, 1976.
3. "CAMEL Phase I—Followup, Evaluation of Revised Automated Geocoder," Edward Lakatos, April 15, 1977.
4. "CAMEL Phase II—Merger and Unduplication of Several Mailing Lists," Earle J. Gerson, June 21, 1979.

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3. "List of Studies...," November 12, 1975.
4. "Draft Pages for Census Questionnaires," November 25, 1975.
5. "Processing and Tabulation Plans," January 15, 1976.
6. "Field Operational Calendar and Definitions of Operations," February 17, 1976.
7. "Copies of Questionnaires," February 17, 1976.
8. "Evaluation of the Majority Edit Rule for Selected Housing Characteristics," March 8, 1976.
9. "Telephone Followup for Content Edit Failures," April 2, 1976.
10. "Evaluation of Geocoded Information/Prestlist Blue Cards," March 31, 1976.
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12. "Outline Plan for Evaluation of Split Coverage and Content Edit Operations...," March 31, 1976.
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3. "Results of Quality Control on the Assembly of Mailing Packages and the Labeling of Questionnaires for the Tape Address Register (TAR)," William C. Davis, May 6, 1976.
4. "Effectiveness of Various Assistance Centers," John Reeder, May 3, 1976.
5. "Evaluation of the Special Place Operation," Lawrence McGinn, November 18, 1976.
6. "Establishment of Piece Rates Using Data from Followup 1 Time Study...," Bette Goodson, September 18, 1976.
7. "Content Edit Results...," Rachel F. Cordesman (Brown), January 21, 1977.
8. "Mail Return Rates, Nonresponse Followup Rates, Pass and Fail Edit Rates and Telephone Followup," Morris Gorinson, January 27, 1977.
9. "Debriefing of Associated Local Officials," Curtis T. Hill, September 23, 1976.
10. "Analysis of Data Entry...," Martin V. Appel, December 6, 1976.
11. "Last Resort Followup Procedure," John Reeder, November 3, 1976.
12. "Investigation of the Use of Nonresponse Codes for Housing Questions...," Rockwell Livingston, February 15, 1977.
13. "Report of Microfilming Operation in Census Field Office," McRae Anderson, August 2, 1976.
14. "Accuracy of Reports of Average Monthly Utility Costs for Owner and Renter Households," Peter J. Fronczek, March 18, 1977.
15. "Results of the Quality Control on Occupation Coding," Barbara Foster (Blass), April 14, 1977.
16. "Bar Code Readability...," Timothy Swann, March 2, 1977.
17. "Remote Terminal Data Transmission Test," Alex E. Listoe and R.C. Simpson, April 18, 1977.
18. "Preliminary Evaluation of Misclassified Occupied Units Study," Richard LaValley, June 9, 1977.
19. "Results of Address Range and Coverage Checks," Richard F. Blass and Bette Goodson, May 20, 1977.
20. "Results of Mortgage Status Record Check," Robert S. Benedik, June 30, 1977.
21. "Characteristics of Households by Mail Response Status," Rachel F. Brown, July 7, 1977.
22. "Study of Yearly Real Estate Taxes for Single-Family Nonmortgaged Owner-Occupied Housing Units...," Robert S. Benedik, July 9, 1977.
23. "Preliminary Evaluation Results of the Precanvass Operation," Barbara (Foster) Blass, August 4, 1977.
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1. "Description of Test Objectives and Calendar of Field Operations," January 26, 1976.

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1. "Results and Analysis...," James Dinwiddie, April 28, 1980.

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1. "Plans for the National Content Test," May 6, 1976.
2. "Calendar of Major Activities...," June 24, 1976.
3. "Copies of Questionnaires," July 9, 1976.
4. "Copies of Questionnaires," November 3, 1976.
5. "Timetable of Processing Operations for Phase 1 Questionnaires," December 22, 1976.
6. "Schedule of Operations, Phase 2," December 22, 1976.
7. "Revised Schedule, Phase 2," February 25, 1977.

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1. "Mail Return Rates, Telephone Assistance Line Results, and Preliminary Response Rates," David Silver, November 18, 1976.
2. "Microfilm Review of Total Income Entries on Unedited Mail Returns," George Patterson and Roger Herriot, November 26, 1976.
3. "Completed Interview Rates—Phase 2," Larry Carstensen, December 3, 1976.
4. "Preliminary Tallys of a Sample of the Unedited Mail Returns," Charles E. Johnson, Jr., December 20, 1976.
5. "Tentative Analysis of Data from the Unedited Mail Returns," David A. Koons and Betty Kent, February 7, 1977.
6. "Phase 1 Return Rates," David Silver, March 24, 1977.
7. "General Coding Quality Control Results," Barbara (Foster) Blass, June 17, 1977.
8. "General Coding (Reinterview) Quality Control Results," Michael L. Mersch, July 6, 1977.
9. "Frequency Distribution from Unedited Early Mail Returns and Final File," Cynthia M. Taeuber, July 18, 1976.
10. "Disability Data...," John McNeil and Douglas Sater, September 9, 1977.
11. "Household Relationship Reinterview Results," Arthur Norton, October 5, 1977.
12. "Analysis of Split-Panel Test for Plumbing Facilities Results," David A. Koons, September 21, 1977.
13. "Standard Errors for Selected Item Totals...," Larry Cartenson, February 15, 1978.
14. "Housing Characteristics Reinterview Results," David A. Koons and Coy L. Lay, Jr., February 21, 1978.
15. "Split-Panel and Reinterview Results for Number of Units in Structure," David A. Koons, March 22, 1978.
16. "Evaluation of the 1976 Reinterview Survey of School Enrollment, Educational Attainment, and Vocational Training," Larry E. Suter, December 29, 1978.

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1. "Plans and Objectives," March 19, 1976.
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7. "Operational Calendar for Evaluation Studies," September 20, 1976.
8. "Staffing Requirements for Evaluation Studies...," December 3, 1976.
9. "Description of Public Information Evaluation Survey," December 9, 1976.
10. "Jeffersonville Time Schedules for Post-Enumeration Operations," March 15, 1977.

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5. "Content Edit Operation Study Final Report," November 1976.
6. "Management Study of 100% Transcription," February 1977.
7. "Initial Results of the Public Information Campaign Evaluation Survey," Jean Foster and Leo Estrada, April 18, 1977.
8. "Cross-Tabulation Results of the Public Information Campaign Evaluation Study," Jeff Moore, May 4, 1977.
9. "Management Study of Place-of-Work Coding," February 1977.
10. "Quality Control Results for Industry and Occupation Coding," Barbara F. Blass, September 20, 1977.
11. "Number and Procedures for Requests for Spanish Language Questionnaires," Alvin Etzler, June 13, 1977.
12. "Blue Card Evaluation," Thomas W. Harahush, September 28, 1977.
13. "Preliminary Results of the Trace Sample," Richard Griffin, September 19, 1977.
14. "1970-1976 TAR Evaluation Study Final Results," Richard LaValley, October 27, 1977.
15. "Primary Results of the Camden Nonhousehold Source Coverage Improvement Program," John Thompson, October 28, 1977.
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18. "Results of the Place-of-Work Coding Quality Control," Steven R. Machlin, January 18, 1978.
19. "Quality Control Results of the General Coding Operations in Travis County and Camden," David Kimble, May 12, 1978.
20. "Evaluation of the Team Enumeration Study," Richard LaValley, June 16, 1978.
21. "Results of the Casual Count Operation, Tested as Part of the Special Place Procedures," Richard Griffin, July 7, 1978.
22. "Results of the Bar Code Test," Edward Lakatos, July 17, 1978.
23. "Evaluation of Resource Materials from the Place of Work Coding," Gordon Mikkelson, September 18, 1978.
24. "Additional Results from the Nonhousehold Sources Coverage Improvement Program," John Thompson, October 25, 1978.
25. "Preliminary Results of the General Coverage Study," Irma Fernandez, November 8, 1978.
26. "Trace Sample," Richard Griffin, April 20, 1979.
27. "Final Precanvass Evaluation Report," Earle J. Gerson, October 24, 1980.

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1. "Report on the Findings of Special Enumeration—Population Register Match for Three Chapters of the Navajo Population," Nampeo McKenney and Gloria Porter, June 14, 1977.
2. "1976 Navajo Project Results Memorandum—Field Activities," Marvin Postma, April 25, 1977.
3. "Geographic Aids Utilized in the Pilot Enumeration of the Navajo Reservation," Valerie Gregg, n. d.

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2. "Field Operations Calendar," January 5, 1977.

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5. "Preliminary Results on the Accuracy of Reports of Real Estate Taxes for Owner-Occupied Households," Peter J. Fronczech and Coy L. Lay, Jr., September 20, 1977.
6. "Requests for Spanish Language Questionnaires," Alvin Etzler, June 13, 1977.
7. "Management Study of the Tract and Block Office Coding Operation," Frank Korpusik, September 6, 1977.
8. "Management Study of Open, Check-in, and H-4 Edit," Maurice T. Spillane, September 1, 1977.
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11. "Management Study of the Content Edit of Mail-Returned Questionnaires," Nancy Tarry, August 22, 1977.
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15. "Management Study of Precanvass Enumeration," Don Brown, July 26, 1977.
16. "Evaluation of Assistance Centers," Alvin Etzler, September 23, 1977.
17. "Management Study of Population and Housing Counts 1, and Diary Review," John Briner, September 30, 1977.
18. "Review of Total Income Entries on Unedited Mail and Nonmail Returns Through Followup 1 from the Trace Sample," George Patterson and Roger Herriot, October 31, 1977.
19. "Failed Edit Rates for Population and Housing Questions from the Oakland Trace Sample Early Mail Review," George Patterson and Roger Herriot, October 31, 1977.
20. "Management Study of Field and Block Coding," Joseph A. Norvell, October 27, 1977.
21. "Final Field Count of Housing Units," Rachel F. Brown, November 30, 1977.
22. "Management Study of Payroll Office Audit," Sheila Ricks, November 14, 1977.
23. "Public Housing Evaluation Study," Janet Tippett, January 12, 1978.
24. "Management Study of Telephone Followup Operation," Barbara Harris, December 1, 1977.
25. "Management Study of Merge and Check of Nonhousehold Sources," Warren O. Davis, January 19, 1978.
26. "Management Study of Followup 2 Enumeration," Michael Wyatt, January 19, 1978.
27. "Quality Control for the Assembly of Mailing Packages and Labeling of Questionnaires," Steven R. Machlin, March 22, 1978.
28. "Further Evaluation of the Use of Reminder Cards," Jean Foster, May 30, 1978.
29. "Results of the Quality Control on Industry and Occupation Coding," Barbara F. Blass, June 19, 1978.
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31. "Rectifier Evaluation in the Industry and Occupation Coding Operations," Barbara F. Blass and Steven R. Machlin, August 11, 1978.
32. "Results of the Rectification Evaluation Study of the Place-of-Work Coding Operation," Steven R. Machlin, August 11, 1978.
33. "Results of the Postcoder Evaluation Study of the Place-of-Work Coding Operation," Steven R. Machlin, November 3, 1978.
34. "Results of the Quality Control of the General Coding Operations," John A. Grom, November 15, 1978.
35. "Final Results of the 1970 TAR Evaluation Study," Kennon R. Copeland, April 20, 1979.
36. "Final Results of the 'Whole Household—Usual Home Elsewhere' Procedure Evaluation Study," Sue Lord, May 14, 1979.
37. "Accuracy of the Reports of Utility Costs of Occupied Households," David A. Koons, July 20, 1979.
38. "Study of Units Misclassified as Occupied," Richard Griffin, August 22, 1979.
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8. "Titles of the Public Use Forms," October 28, 1977.
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10. "Precensus Operational Time Schedule," November 2, 1977.
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13. "Revision in the Plans for Collecting '100-Percent' Income Data," December 8, 1977.
14. "Evaluation Projects," November 28, 1977.
15. "Final Draft Copies of Questionnaires," January 18, 1978.
16. "Revised Precensus Operational Time Schedule for Lower Manhattan," January 27, 1978.
17. "Description of Census Plans and Objectives," February 10, 1978.
18. "Copies of Questionnaires," February 13, 1978.
19. "Copies of Questionnaires for La Plata and Montezuma Counties," February 13, 1978.
20. "Identification of Public Use Forms," April 6, 1978.
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23. "Final Draft Copies of Questionnaires...," July 24, 1978.
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26. "Operational Time Schedule for Processing at Michoud," October 10, 1978.
27. "Revised Operational Time Schedule for Processing at the New Orleans Office," October 25, 1978.

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2. "Summary Results of Advance Post Office Check," Rockwell Livingston, January 17, 1978.
3. "Final Mail Return Rate," Gerald J. Post, November 14, 1978.
4. "Reporting Results for Alternative Versions of the Spanish Origin Question," Nampeo McKenney and Edward Fernandez, December 1, 1978.
5. "Evaluation Results of the Post-Enumeration Post Office Check," Kennon R. Copeland, May 14, 1978.
6. "Evaluation Results of Lockbox Coverage Improvement," Gordon Mikkelsen, May 25, 1979.
7. "Lower Manhattan Trace Sample Results," Cynthia M. Brown, May 19, 1979.
8. "Results of Rectification Evaluation of Place-of-Work/Migration Coding," John A. Grom and David C. Whitford, November 8, 1979.
9. "Evaluation of the Coding of Supplementary Questionnaires for American Indians," Charlotte M. Davis, November 8, 1979.
10. "Microfilming and the Quality Control Management Information System," Earle J. Gerson, January 7, 1980.
11. "Analysis of Packing Materials," Edward Lakatos, November 13, 1979.
12. "Results of Industry and Occupation Coding Quality Control," Charlotte M. Davis, July 21, 1980.
13. "Processing Biases of the 100% Diary Review," Deborah A. Harner and Kathryn F. Thomas, July 21, 1980.
14. "Place-of-Work/Migration Coding Postcoder Evaluation," John A. Grom, October 24, 1980.

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2. "Schedule of Operations," July 5, 1978.
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2. "Reporting from the Condominium and Cooperative Questions on the Mail Returns," Coy L. Lay, Jr., January 5, 1979.

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Chapter 3. Geography, Addresses, and Questionnaire Printing and Labeling

INTRODUCTION

This chapter covers three major census preparatory activities: (1) creation of the geographic structure and tools needed to assign persons and housing units to the appropriate political and statistical areas, (2) compilation of an address list to be used in the mailout of census questionnaires and as a control for the check-in of the returned questionnaires, and (3) printing of census questionnaires and their assembly into mailing packages.

GEOGRAPHY

Part of the geographic work for the 1980 census involved defining, delineating, and identifying the various areas for which census data were to be collected and published. The geographic tools for the census included maps showing these areas, a master reference file (MRF) that catalogued them and showed their relationships to other entities, and computerized files used to assign geographic codes to addresses geographic base file/dual independent map encoding (GBF/DIME) files.

During 1982, a Geographic Operations Task Force at the Census Bureau conducted an indepth review of the geographic operations at the Bureau, focusing on the 1980 census and making recommendations for improved methodologies to be introduced into the geographic system for future censuses. Particular attention was given to maps, the MRF, the GBF/DIME files, and other geographic files. In writing this section, reference is made to the task force's report, "An Assessment of the Major Geographic Products Prepared for the 1980 Decennial Census and Recommendations for Future Geographic Operations and Products," 1982. Also referred to is the report of the Geographic Working Group of the District Manager's Advisory Group, "Geographic Problems in the Decennial Census," April 1982.

Geographic Areas

The 1980 census provided data for numerous political and statistical areas:

Political areas

States, District of Columbia, Puerto Rico, and outlying areas
Counties and equivalent areas
Minor civil divisions (MCD's)
Incorporated places
American Indian reservations
American Indian subreservation areas
American Indian tribal trust lands
Alaska Native villages
Congressional districts
Election precincts
Neighborhoods

Statistical areas

-Regions and divisions
Standard consolidated statistical areas (SCSA's)
Standard metropolitan statistical areas (SMSA's)
Urbanized areas
Census county divisions (CCD's)
Unorganized territories
Census designated places (CDP's)
Census tracts
Block numbering areas (BNA's)
Enumeration districts (ED's)
Block groups (BG's)
Blocks

These areas are described briefly in chapter 1 and in more detail (with the numbers of each) in appendix 3A. (Other areas not listed above, such as school districts, transportation zones, and ZIP Code areas, are discussed in Ch. 8, "Data Products and Dissemination.")

The Census Bureau organized these areas into hierarchies for tabulating and reporting statistics. Political and statistical units intermingled in the hierarchies; for example, States were combined to define the census geographic divisions and regions, counties were the basic building blocks for SMSA's (except in New England), and counties were subdivided into MCD's and CCD's, which in turn were comprised of blocks or ED's. Figure 1 illustrates these and other relationships.

Except for SMSA's and SCSA's, the Census Bureau was responsible for establishing areas that were specially delineated for statistical purposes, although in doing so it relied on recommendations from State and local officials. The Office of Management and Budget established and identified component areas of SMSA's and SCSA's based on published criteria.

The Census Bureau received guidance from a number of outside sources in the delineation of statistical areas. Census Statistical Areas Committees (CSAC's), established in each SMSA (and non-SMSA county with census tracts), played an important role in delineating such areas. The CSAC's generally included representatives from city and county government agencies, economic development councils, chambers of commerce, regional planning commissions, councils of government, neighborhood associations, universities and colleges, social service agencies, citizens' groups, newspapers, public utilities, and local business firms. Local chapters of the American Marketing Association, the American Statistical Association, the American Planning Association, and other nationwide groups with an interest in small-area statistics also participated.

The CSAC's were organized through local initiative and received technical assistance from the Census Bureau. Following Bureau guidelines, they drew boundaries for census tracts in areas new to the tract program, decided where to divide ex-

existing census tracts that had grown too large in population and where to adjust boundaries no longer appropriate for census purposes, and assigned numbers or suffixes to new or split tracts. They also were offered the opportunity to help the Census Bureau determine ED, CCD, and CDP boundaries.

Local GBF/DIME file coordinating agencies, which created and/or updated the files, were largely responsible for assigning new block numbers (following Census Bureau guidelines and subject to Bureau approval) in areas not block-numbered in 1970, thereby also determining the block groups. In general, 1980 block groups were conterminous with 1970 block groups, and 1980 block numbers were the same as those used in 1970, except where the features defining blocks had changed.

Bureau staff conferred extensively with State and local officials regarding boundary delineations outside of metropolitan areas. They discussed such matters as the boundaries of census tracts and CDP's in counties outside SMSA's, and local recommendations for ED boundaries. ED's were defined in all areas of the United States by the Bureau. Locally devised ED plans were accepted, subject to Bureau guidelines, outside of block-numbered areas.

Maps

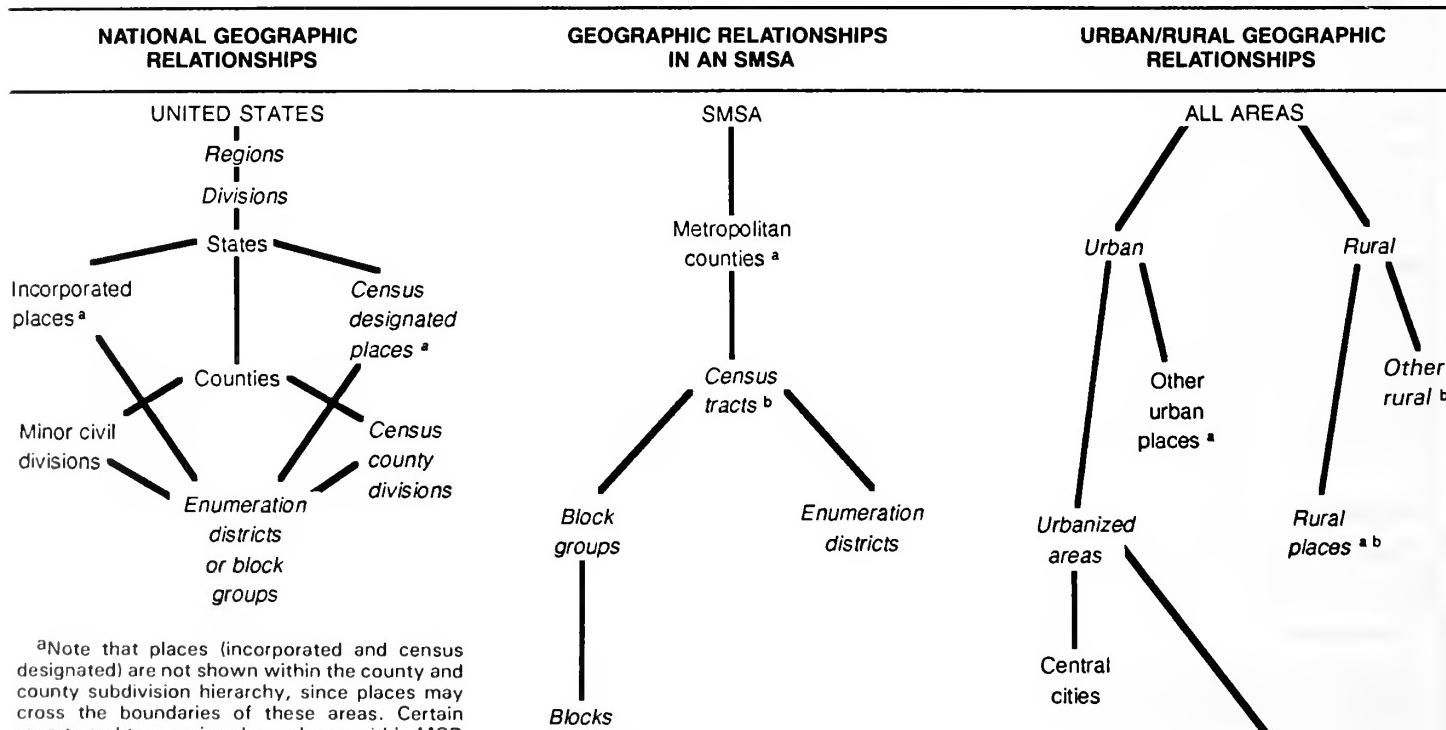
Maps are essential tools in the collection and interpretation of census data. The Census Bureau undertook major mapmaking activities in order to meet its extensive and complex cartographic needs. For the 1980 census, the Bureau produced

more than 32,000 individual mapsheets to cover the United States, Puerto Rico, and the outlying areas. The maps were prepared in a massive operation conducted largely at its Jeffersonville, IN, facility. Many of the maps were obtained from State and local agencies, but had to be enhanced for Bureau use by the deletion of information irrelevant to census-taking purposes and by the addition of census geographic areas.

The official census date for the boundaries of political areas was January 1, 1980. The maps provided for field work reflected boundaries in effect on January 1, 1978, for mail census areas, and January 1, 1979, for conventional areas. These cutoff dates had to be established to complete production of maps in time for key census operations. After the enumeration, the maps and other census records were updated to reflect political boundaries as of January 1, 1980, and census questionnaires were recoded, where necessary, to their correct geography. Any boundary changes, such as annexations, effective after January 1, 1980, were not reflected in the final census tabulations.

While this chapter will focus on the production of the field maps, maps were also essential to interpreting census data, i.e., relating the figures to the proper geographic area. Maps were sent to local officials during the review of field counts (May-July 1980), though these maps did not show the January 1, 1980, political boundaries. Updated maps (without the 1980 urbanized area boundaries and the final CDP boundaries) were made available in early 1981 with the counts that were sent to State redistricting officials. Final maps were ready for sale to data users

Figure 1. Geographic Relationships (Italics indicate statistical areas)



^aNote that places (incorporated and census designated) are not shown within the county and county subdivision hierarchy, since places may cross the boundaries of these areas. Certain reports and tape series show places within MCD or CCD within county, but in these cases data pertain only to that part of a place which is within a particular higher-level area. Enumeration district and block-group summaries recognize place boundaries, making ED's and BG's important as the lowest common denominator for the higher-level entities

^aIn New England, SMSA's were defined in terms of towns and cities, rather than counties (as in the rest of the country).

^bCensus tracts subdivided most SMSA counties as well as about 200 other counties. As tracts may cross MCD and place boundaries, MCD's and places are not shown in this hierarchy.

^aIncludes both incorporated and census designated places.

^bIncludes both rural farm and rural nonfarm.

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beginning in mid-1981. The production of map sheets for sale to users and maps included in the printed census reports are discussed in chapter 8.

Types and sources of maps—There were essentially five basic series of maps used in the 1980 census—metropolitan/vicinity, place, place-and-vicinity, American Indian reservation, and county.

For the 1970 census, the Census Bureau undertook the development of its own series of maps to provide uniform coverage of the densely settled portions of metropolitan (SMSA) counties. This was referred to as the metropolitan map series (MMS). The area covered by the MMS was expanded for the 1980 census. A related series—the vicinity map series (VMS)—was developed to cover areas of sizable urban development not located in SMSA's. In the few instances where these sheets covered an entire county, there was no separate county map sheet; otherwise, the MMS and the VMS were treated as insets to county maps. Generally, the scale for the metropolitan and vicinity maps was 1 inch to 1,600 feet. In selected areas with very dense development, some map sheets were produced at a scale of 1 inch to 800 feet; some sparsely settled areas were mapped at a scale of 1 inch to 3,200 feet or even 1 inch to 6,400 feet.

The 1980 census required updating of the MMS sheets from 1970 and creating new MMS and VMS sheets. All GBF/DIME file areas were covered on MMS map sheets, but the MMS usually included additional territory. In a few areas, local agencies created GBF/DIME files that extended beyond MMS coverage, so they either prepared their own MMS-type maps or used enlargements of U.S. Geological Survey (USGS) maps; some of these maps were used in the 1980 census. None of the areas shown on the VMS had GBF/DIME-file coverage. These two types of maps were developed and updated along slightly different lines.

MMS sheets had been created for the 1970 census as the basis for developing address coding guides—the predecessors to the GBF/DIME files—for certain areas. These maps were updated by local agencies beginning in 1972 as part of a continuing GBF/DIME file update program. The same agencies were asked to correct and update existing and newly created MMS sheets for other portions of their SMSA's. MMS sheets for newly designated GBF/DIME file areas (the program was expanded after the 1970 census) were prepared by the Census Bureau and updated by local agencies in advance of creating the GBF/DIME files.

The Bureau determined in late 1977 there was a need to create new MMS-type sheets for non-GBF/DIME file areas, so a major effort was undertaken to create these sheets, using USGS maps as a base, and to involve local agencies in their review and update. In SMSA's, the maps became part of an MMS; outside of SMSA's, they were classified as VMS sheets, which were created in much the same way as MMS sheets. Indeed, VMS and MMS sheets can be considered as a single series. Agencies in VMS areas were contacted in May 1978 and asked to review the maps within a 3-month period. This review, usually done by local agencies different from those working on the GBF/DIME files and MMS sheets, was completed in late 1978.

The Bureau developed the place map series to cover incorporated places and CDP's not shown in their entirety on

MMS/VMS sheets. As with the MMS and VMS, place maps were regarded as insets to the county map sheets. The scale varied from sheet to sheet. Most place maps were created by superimposing census boundaries and names over base maps supplied by State or local governments.

For medium-size places—generally with 15,000-40,000 population—not covered by MMS and VMS sheets and having dense development outside their limits, the Bureau developed a series of maps referred to as the place-and-vicinity map series. Also included in this category were map sheets showing non-MMS/VMS places which (1) had enclaves of unincorporated territory within their boundaries, (2) had some small adjacent unincorporated territory identified with block or ED numbers, or (3) covered two or more contiguous places. In all other respects, place-and-vicinity maps had the same sources and characteristics as place maps and were insets to county map sheets.

Maps for American Indian reservations were acquired from the Bureau of Indian Affairs (BIA) and State governments in the fall of 1976. In the summer of 1977, tribal authorities for each reservation were asked to update the road network on the maps, but many chose not to participate. The updated information was posted to the county maps. For 20 (of 275) reservations where the road network shown on the BIA maps was known to be outdated or incomplete, about 5,200 aerial photographs were obtained in a cooperative effort with the BIA and USGS for use in enumerating these reservations. ED's were added to the BIA maps and were used in field operations as supplements to the air photo "maps." The BIA maps were insets to the county maps.

The county maps were the primary component of the Bureau's 1980 map coverage. A complete set of these maps covered the entire Nation. Each of these maps covered an entire county (or county equivalent) with one or more map sheets. Where these maps did not provide sufficient detail for densely settled areas, the Bureau used one of the types of maps described as insets to the county maps; the portions of counties where such alternative coverage existed were shaded on the county map sheets. In a few instances, a county is entirely covered by MMS sheets, in which case those sheets comprise the county map. Most maps in the county series were at a scale of 1 inch to 1 mile.

The primary sources for maps covering counties and places not covered by the MMS/VMS were the individual State departments of transportation. In the spring of 1974, each one was asked to send the Bureau a complete set of its county and place maps. The Bureau also requested that revisions or updates to maps be submitted as they were produced. The States were contacted again in the fall of 1976 and the fall of 1977 to remind them to send revisions and updates to the Bureau.

To augment the materials obtained from the States, the Bureau contacted several other map sources. In the fall of 1975, it requested maps from each non-SMSA county government. At about the same time, letters were sent to over 500 regional planning commissions and councils of government requesting county and place maps. In the spring of 1976, 144 private companies throughout the United States were asked to provide lists of areas for which they produced maps.¹ In the fall of 1977, maps and

¹Geographic planning specialists from the Bureau's regional offices visited private map sources in the fall of 1977 to ascertain whether any new mapping had been completed; however, private maps were little used because of the difficulty in obtaining copyright releases.

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letters were sent to the governing bodies of all places outside of MMS coverage asking them to either update the maps or send the Bureau better maps. A further effort was made in the summer of 1978 to obtain maps for those places for which none had been received or for which better ones were needed. The maps acquired for non-SMSA areas were compared and evaluated, and the best were selected as the base maps for the 1980 census. Many required extensive cleanup to omit information not relevant to census needs and some had to be completely redrafted. The final phase of map selection was completed in the summer of 1978.

Although military installation maps were not a separate map series, the Bureau made a concerted effort to obtain such maps from various military commands and organizations. The Marine Corps and the Coast Guard assigned liaisons to work with the Bureau and maps were obtained from both of these organizations. The Naval Facilities Engineering Command provided maps for most naval installations, and almost all maps covering Air Force bases were obtained from the Air Force Environment Planning Division. From February 1977 to October 1978, telephone calls were made to hundreds of military installations, especially Army bases, to obtain maps for additional areas. Beginning in November 1978, another effort was made to secure maps for installations that had not responded. If no map was received, the Bureau used the best map available that showed boundaries and streets.

Boundary overlays and Boundary and Annexation Survey—After maps had been selected and cleaned up or redrafted, if appropriate, a white mylar (plastic) copy was prepared. The mylar copy became the base for a multilayered master office control map (MOCM). The base map showed national, State, and county boundaries and names. Overlays for the MOCM's were prepared to display (in colored pencil) all census statistical and political boundaries and names. The information on the overlays was transferred to "artwork" and then reproducible maps showing information on the base maps and overlays were produced. For distribution to the field offices, diazo paper copies were made of "reproducible" maps.

The boundaries on the artwork version of the overlays were to be shown using preprinted symbols. This symbolization could not be accomplished in time to supply maps for the prelist operation and some early district office field operations, so some boundaries were drawn by orange makers instead and were differentiated by the use of broken, dash/dot, and solid lines. Later, a standarized set of dry-transfer symbols was used to identify each type of political and statistical area on the census maps. To avoid the possibility that two or more coinciding boundaries might obscure one another, the symbols were designed to overlay each other in combination and still be identifiable.

Each of the overlays was based on special source material, most of which came from the Boundary and Annexation Survey (BAS) conducted annually by the Census Bureau and the programs to develop or modify statistical areas between 1975 and 1977.

The political/statistical boundary overlays showed boundaries and names of MCD's, CCD's, incorporated places, CDP's, American Indian reservations, and Alaska Native villages. The BAS was the primary source of information for names and boundaries of counties, MCD's, and incorporated places. From

1970-76, only incorporated places having 2,500 or more people were surveyed; beginning in 1977, all places, regardless of size, and all counties were canvassed. As part of this survey, an official of the government of each place was furnished with a map showing its latest legal limits according to Census Bureau records; the official was asked to review the map, update the boundaries where necessary, and certify that the maps reflected the corporate limits as of January 1 of the survey year. A questionnaire was also included in the survey requesting information about each boundary change, including the type of change (annexation, detachment, merger, etc.), the number of the official ordinance or resolution authorizing the change, the effective date of each action, the size of the area annexed or detached, and estimates of the population and number of housing units in the area. County officials were asked to review the boundaries of the county and the MCD's (if recognized by the Bureau) and to verify the names of all MCD's and incorporated places in the county. If a new place was identified, it was contacted for a map and related information. Maps of legal boundaries and lists of area names were obtained from the governments of Puerto Rico and the outlying areas.

The BIA provided certified boundary information for Federal reservations based on BIA's interpretations of treaties, statutes, executive orders, and court orders. For the State reservations, the Bureau relied on information in State records to determine the official boundaries.

Names of Alaska Native villages, as recognized under P.L. 92-203 (the Alaska Native Claims Settlement Act), were identified for the Bureau by the State of Alaska. As these entities did not have official boundaries, maps were not obtained for them. Each village name was associated with a location on a map.

The Bureau provided guidelines and worked with State agencies, the governments of Puerto Rico and the outlying areas, and local Census Statistical Areas Committees (CSAC's) to define the boundaries for CDP's. The Bureau worked with State agencies and CSAC's to review and, where appropriate, modify CCD boundaries and names in the 20 States where MCD's were not recognized for census purposes.

CSAC's provided the input for the census tract overlays and some of the ED overlays. Census tracts were delineated using general guidelines provided by the Bureau, with the local plans subject to detailed review and approval by the Bureau in order to maintain an overall uniform standard. In areas that did not have census tracts, but were to have numbered blocks, the Bureau established block numbering areas (BNA's), which also were shown on the tract overlay. The Bureau worked with the CSAC's, State and regional agencies, and tribal officials to prepare local ED plans for nonblock-numbered territory.

An "other boundary" overlay was prepared to identify military installations, Federal and State parklands, selected national forestlands, election precincts, American Indian subreservation areas, and American Indian tribal trust lands. These entities had to be recognized in the ED delineation process.

For areas that had local ED plans, the Bureau reviewed the plans for acceptability and then applied the boundaries, revised where necessary, to the ED overlay. For nonparticipating areas, the Bureau laid out ED's, based on detailed procedures, to fulfill the requirements for data collection and tabulation. After an ED plan was prepared, the ED's were numbered and recorded on control lists.

Block numbers for the block-numbering overlay for areas with GBF/DIME-file coverage were assigned by the local agencies working on the files and the maps. In other areas, the Bureau usually assigned the block numbers. These included "administrative block numbers" (for enumeration purposes only) in otherwise nonblock-numbered areas. In prelist areas, these may have been shown on a block-number overlay or preliminary ED overlay, while in conventional areas they were always on a separate overlay.

Maps for field use—The first need for maps in the field was for the prelist operation, from February to November 1979, in which census enumerators listed addresses in the non-tape address register (TAR) portion of the mail census areas. Prelist enumerators used large-scale maps of their ED's as a guide for staying within their assigned territory, for canvassing it systematically, and for marking the location of housing units and group quarters. Small-scale maps of each prelist area were provided for crew leaders and for use in the prelist office.

As the district offices opened in January 1980, they were sent district office master maps, maps to be used in recruiting, and two sets of maps to be used in the field work, one by the supervisors and the other by enumerators.² The district office master maps were a set of map sheets showing political and statistical area boundaries and names; census tract, block-numbering area, and ED numbers and boundaries; and block numbers. The recruiting maps were duplicates of the district office master maps and were used by the recruiter to spot the location of applicants' residences to make sure that, as far as possible, enumerators lived in or near the ED's to which they were assigned.

Each crew leader received the portion of the supervisors' set of maps showing the geographic areas in his/her district. Enumerators were given larger-scale maps that showed the boundaries of, and streets and block numbers within, the area contained in their assigned ED's. Without these maps, the enumerators would not know the territory for which they were responsible, and thus would be likely to omit a portion of it or mistakenly include part of a neighboring ED. The maps also helped the enumerators cover their ED's systematically, locate every housing unit and group quarters, and assign the correct geographic codes to the unit.

The next maps required for census operations were those used in the local review program (discussed in chs. 1 and 5). All symbolization work had been completed for these, whereas it had not been for the prelist maps and some of the district office maps. The maps also reflected corrections resulting from errors—missing or duplicate ED or block numbers, missing or incomplete boundaries, etc.—discovered by prelist and district office personnel through various operations and reported to a geographic processing unit in Jeffersonville where they were reviewed and, if appropriate, entered on the control maps. The local review maps still reflected "precensus" boundaries for governmental units—January 1, 1978, for mail census areas and January 1, 1979, for conventional areas.

The last phase of field map development involved the creation of "replacement" maps showing ED's that had to be split

(separated into two or more parts) to reflect political limits as of January 1, 1980, and other appropriate changes or corrections. A map was prepared for each ED that was split. These maps were sent to the district offices from June to August 1980.

Map problems—There were problems with both the production and quality of 1980 census maps. With regard to production, maps for both the 1979 prelist offices and 1980 district offices were completed substantially behind schedule. The last of the prelist maps were due in the field by March 1979, but were not shipped to the offices until July 1979. To hasten distribution, most of the maps were sent without being cut to size and mounted on backing sheets and without ED boundaries highlighted in color and reviewed for accuracy. These operations had to be performed in the field offices, further delaying the prelist.

Many maps were illegible or incorrect. Because prelist map production fell so far behind schedule, there was no time to complete all the overlays using dry-transfer symbols. Instead, orange markers were used to delineate the ED boundaries. When paper copies of these "orange line" maps were made, the ED boundaries became wide black lines on the paper prints; they could not always be distinguished from other boundaries, or it was unclear what features they followed. Also, the boundaries may not have matched the boundaries on the MOCM, which was the basis for master reference file coding, ED separations, artwork for map reproducibles, etc. Some ED boundaries ended at the border of one map sheet and did not continue in the same location, if at all, on the adjoining sheet. ED numbers were not posted for some areas, while other areas had two or more numbers. Some block numbers were inverted, omitted, repeated, or obscured by other map features.

Maps were delivered late to many of the 1980 district offices as well, with the result that pre-Census Day field operations requiring maps were delayed in some areas. As in the prelist offices, the district office staff had to review the maps and solve numerous problems prior to preparing the maps for enumerators. Because of the errors in the first set of master maps, a revised set was sent to most district offices. The precanvass operation, in which enumerators updated mailing lists for areas of the country where addresses were purchased from commercial vendors (i.e., TAR areas), was delayed in some offices by the decision to plot TAR ED's in Jeffersonville rather than in the district offices. It was felt that this operation, and the resolution of related problems, could be handled more effectively at a centralized location, but it also meant that the maps could not be sent to the district offices as early as expected.

The aerial photographs used as enumeration maps on some American Indian reservations also presented serious problems. Because the photographs were unrectified, the roads and other features on many photos could not be lined up from frame to frame. The photo maps, formed by piecing together individual photos, were large and cumbersome; some of the photos were not in their proper location when they were first put together and had to be corrected in the district offices by technicians sent from headquarters and Jeffersonville. Roads and structures could not be easily detected on some photographs by untrained persons. Because of these shortcomings, some enumerators turned to other map sources.

²The enumerator maps used in the prelist operation were reused in the 1980 district offices containing prelist areas.

Master Reference File

The MRF was a master geographic control file on the computer from which various other control files were generated for use in gathering, tabulating, and publishing census data. The MRF contained a hierarchical inventory of all the political and statistical areas within the United States, Puerto Rico, and the outlying areas, including their proper names, numeric codes, political status, and relationships to other entities.

The utility of the MRF can be illustrated by considering some of the types of information it provided for an incorporated place:

1. The legal name and political classification of the place.
2. Whether it was a functioning legal entity.
3. Its population for 1960 and 1970 and number of housing units for 1970.
4. The territorial relationship of the place to its county and MCD, i.e., whether part, coextensive, etc.
5. In a subfile of the MRF, whether it had changed its name or political status since the previous census, or had experienced boundary changes.
6. Whether it was in an urbanized area.
7. In which field (district) office area it was located.
8. Whether it was part of an SMSA and/or SCSA.
9. Which congressional district(s) it was in.
10. All lower-level geography associated with the place (census tracts, if any; ED's; blocks, if any; etc.).

There were a number of major uses for the MRF. First, it served as an editing tool; the code structure of the MRF was the standard against which all other reference files and lists used in the census were edited and corrected. For instance, the GBF/DIME files were edited by using the MRF to determine whether the codes for a combination of block, census tract, place, MCD/CCD, and county were correct. Discrepancies between the files were identified, but time was not available to research and correct most of them; only a small number of high-level mismatches were resolved and the appropriate file revised. Discrepant records that could not be corrected were "disabled" from the version of the GBF/DIME files used for geocoding addresses.

Second, the MRF contained information that controlled various facets of census operations. It specified, for instance, whether a particular area was to be enumerated by the mail census method or by conventional techniques. District office control information facilitated the distribution of address registers, labelled questionnaires (sent to the appropriate post offices within a district office area), and geographic reference materials to the 409 district offices.

Third, the MRF provided the legal names and relationship codes required for the automated generation of publications. At the same time, the final version of the MRF reflected the January 1, 1980, relationships between geographic entities. This ensured that data would be tabulated for any unit of geography as often as required for publication at various levels. For example, the MRF had to contain the information that Denver County, Denver CCD, and Denver city were coextensive, so that the same data would be presented at all three levels.

Fourth, the MRF was used to generate documentation of the geographic code structure used in the census. An example was the geographic identification code scheme (GICS), a set of tables that presented the names and codes of political and statistical

areas for which data were tabulated. (See Ch. 8, "Data Products and Dissemination" for a description of the GICS.)

The MRF contained seven basic record types—State, county, MCD/CCD, place, census tract, geographic tabulation unit base (GTUB), and ED. Appended to each ED record was a listing of its component blocks, if any. Each of these types of areas is discussed in appendix 3A except the GTUB, which was the basic building block or structural element of the MRF. GTUB's honored all statistical and political tabulation boundaries (except ED's and blocks), and contained all of one or more ED's. In addition to the seven basic record types, a number of subfiles were prepared. Some contained the names of certain entities represented in the main MRF only by codes, such as SMSA's, regions, divisions, Indian reservations, etc. Others showed the relationship of ED's and blocks to election precincts, contained data on land area, recorded information on changes in geographic entities since 1970 (to be used in footnote production), etc.

Four basic versions of the MRF, reflecting boundary updates and geographic corrections, were produced at different stages of the census: "precensus" MRF, "field count capture (FCC)" MRF, "collection" MRF, and "tabulation" MRF. At all stages, extensive editing and review were performed to ensure the structural integrity of the file and to verify legal values and relationships. The "precensus" files, produced clerically from maps and reflecting corporate limits as of January 1, 1978, for mail census areas and January 1, 1979, for conventional areas, were completed from October 1979 to March 1980, about 6 months behind schedule, due primarily to the delays in map production.³ The "precensus" MRF was used as the basis for computer-defining TAR ED's, editing GBF/DIME files before they were used to geocode TAR addresses, controlling prelist keying, and providing district office, ED, and block numbers for census questionnaire labels, and as the control file for prelist keying.

Shortly after production of the "precensus" MRF, a first "field count capture" file (FCC-I MRF) incorporating TAR ED's, some late changes, and many corrections from a variety of reviews and edits was prepared. This file was used for aggregating and controlling population and housing counts for the local review program. A second "field count capture" file, (FCC-II MRF, not completed in final version until December 1980 for all 50 States and the District of Columbia), was constructed for the production of preliminary population and housing reports; it was the first in which the MRF geography reflected the official reference date for census geography—January 1, 1980. The "collection" MRF was derived by matching basic MRF records with the data acceptance capture file, which had been produced using the geography (district office, ED, and block numbers) shown on the questionnaires during the microfilming operation in the processing offices. This file also included corrections and boundary updates not included in the previous file, especially those resulting from the local review operation. The advance reports and redistricting statistics were derived using the "collection" MRF. The "tabulation" MRF, used as the basis for final published census reports, was created by using final codes for a number of geographic areas whose existence and extent were dependent on the counts themselves—SCSA's, SMSA's, urbanized areas,

³Separate files were produced by State for prelist and conventional areas and by SMSA for TAR areas. The prelist files were completed from November 1979 to January 1980; the conventional, January to March 1980; and the TAR, October 1979 to January 1980.

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CDP's, and size categories. Late corrections continued to be inserted into the tabulation MRF until mid-1982. Once the tabulation MRF was used for processing 1980 census data, no further changes to it were allowed, so that all census publications reflected a consistent set of areas. Corrections that were not carried out or known in time to be reflected in the "tabulation" MRF were shown as errata in the publications or in subsequent materials prepared by the Bureau.

GBF/DIME Files

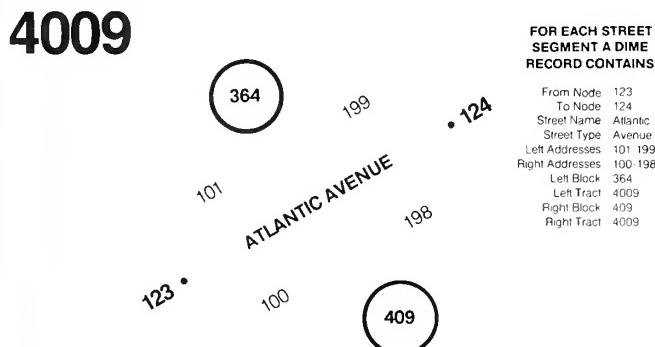
The emphasis in this section is on the use of the GBF/DIME system for geocoding 1980 census addresses. The system has many other uses as an information management tool in planning. GBF/DIME files as a product of the 1980 census are discussed in chapter 8.

GBF/DIME files for 276 SMSA's were the Census Bureau's tools for assigning geographic codes to the addresses purchased from commercial vendors.⁴ These files were created from the Bureau's MMS and are a computerized representation of the information in the MMS. A geographic base file presents street map features in a form that can be used by computer; dual independent map encoding provides a method for representing map features numerically for processing by computer, based on the theory that the continuity of the street network around a given block can be verified by two independent tests.

The GBF/DIME concept was derived from topology and geometry, in which every point, linear feature, and area is described in relation to all neighboring features. The point (or "node point") on a map where a street or other map feature, such as a city limit or a river, intersects another street or feature, comes to an end, or changes direction, is labeled with a dot and given a unique identifying number. A line drawn between two node points is a straight-line segment, and each street, river, railroad track, municipal boundary, etc., on a metropolitan map can be considered as one or more such segments. Curved lines are divided into a series of small straight-line segments.

For each segment, a GBF/DIME record contains numerical codes for such higher level geography as State, county, MCD/CCD, and place, and the information illustrated by figure 2.

Figure 2. Contents of a GBF/DIME Record



⁴In addition to the 276 SMSA's for which computer geocoding was undertaken, there were GBF/DIME files for 2 SMSA's that were not included in the mail census—Anchorage AK, and San Juan, PR.

When the address file for a particular SMSA is matched to the GBF/DIME file for that SMSA, geographic codes can be assigned to each address. For instance, the address 132 Atlantic Avenue, an even-numbered address on the right-hand side of the street segment, would be assigned the codes for block 205 and tract 4009. Since tract/block combinations are unique within county (e.g., there is only one block 205 within tract 4009), higher-level geographic codes and codes for other lower-level areas also can be appended to an address if the coded areas are unique to block 205.

Between 1969 and 1971, planning agencies in 196 of the then 233 SMSA's participated with the Bureau in the development of the original GBF/DIME files as successors to the address coding guides (ACG's) used to geocode purchased addresses in the 1970 census. ACG's were created for the urban cores of 147 SMSA's, though only 145 were used in 1970 geocoding and other census activities, because two of the SMSA's were subsequently defined as nonmail areas. The files soon became outdated due to modifications in geographic boundaries and street patterns, and the establishment of over 40 new SMSA's in the period 1970-73 necessitated the expansion of the number of available files. Files already established had to be updated and maintained to reflect current information and files had to be developed for newly designated SMSA's. To accomplish this, the Bureau established the CUE program to correct, update, and extend the GBF/DIME files and the metropolitan map sheets upon which they were based.

Local agencies (mainly councils of government or regional and county planning agencies) carried out the CUE program, with the Bureau providing the necessary maps, clerical procedures, processing methodology, computer programs, and technical assistance. The Census Bureau helped defray most of the costs of creating and updating files through a series of joint statistical agreements (JSA's) with the local agencies.⁵ Prior to fiscal year 1977, the Bureau funded 50 percent of the costs; after that, 75 percent. The first JSA's for file work related to the 1980 census were issued in 1975. Those SMSA's that did not sign JSA's did the CUE work under other funding arrangements, or the Bureau had to do it.

Under the JSA's, the local agencies were to return the corrected and updated GBF/DIME files and the associated metropolitan map sheets by October 1, 1978. About one-fourth of the SMSA's had completed their work by then. Many agencies were given extra time to complete the final edits, while the Bureau was completing other operations related to its work on the files. In late 1978, files were called in from some agencies and the work was completed by the Bureau, either in its regional offices or in its Pittsburgh, KS, facility. It was not until early 1979 that all completed files were received from the local agencies.

The local agency work on the files included various quality-control procedures and computer edits. When the files were received from the local agencies, they were subjected to further edits. Errors found during these edits were resolved clerically if the number was above a specified tolerance level. After the first series of Bureau edits, the local agency GBF/DIME files were reformatted for use in matching to address files and were again edited and checked for geographic errors. The GBF/DIME files were

⁵In the early stages of the program, other Federal agencies, particularly the Departments of Transportation and Housing and Urban Development, also provided funding.

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matched against the precensus MRF and records were flagged as unusable if they disagreed with the MRF.

ADDRESSES

Introduction

The 1980 census used the mailout/mailback technique in areas containing about 95.5 percent of the population. With this method, addressed questionnaires were delivered on March 28, 1980, to each housing unit on the Bureau's address lists, and respondents were asked to mail them back on Census Day, April 1. Housing units for which questionnaires were not returned were visited by census enumerators. The remaining 4.5 percent of the population was enumerated using the conventional, door-to-door method. Unaddressed questionnaires were delivered to housing units by the U.S. Postal Service (USPS); householders were instructed to fill out these forms and hold them until an enumerator visited, rather than mail the forms back to the census office.

The cornerstone of the mail census method is an address list that is as complete and accurate as possible. For the 1980 census, this list took the form of tens of thousands of preprinted address registers—one or more for each ED—that were generated from computer files. The address registers, which were shipped to the district offices soon after they opened, contained the address of each housing unit that could be coded to a particular ED and served as the control on census field operations. A questionnaire was mailed to every address in the register and returned questionnaires were checked against the addresses listed in the registers; if a questionnaire had not been received in the field office, an enumerator visited the housing unit. In conventional areas, addresses were listed at the time of the enumeration.

The procedures used to create address lists differed by type of area—TAR or prelist. TAR (tape address register) describes urban areas in SMSA's for which there was post office city delivery, mailing lists that could be purchased on computer tapes from commercial vendors, and GBF/DIME files. Based on these variables, the boundaries of TAR areas—called the "blue line"—were plotted by headquarters staff during 1977 and 1978. Maps showing the extent of city delivery areas with street name and house number addresses were obtained from individual post offices. Maps or lists showing the areas covered by the GBF/DIME files came from the local GBF/DIME file coordinating agencies or were prepared in the Geography Division at Bureau headquarters. It was to include in the TAR area any rural-delivery areas with street-name/ house-number addresses, but they had to be deleted because the commercial mailing lists did not cover them; these areas were prelisted instead.

All other mail census areas were prelist areas, in which the original lists were in handwritten form and were compiled by census workers in the field. Regardless of the method used to acquire the original lists—TAR or prelist—the addresses were subjected to a number of updates and checks by the USPS and by census enumerators. The purpose of these checks was to assure that the lists were as complete and accurate as possible. The TAR addresses were updated by the USPS in an "advance post office check" prior to the printing of address registers and their delivery to the district offices. TAR address lists were further improved prior to Census Day in an operation called

"precavass," in which census enumerators added, deleted, and corrected address listings. Both TAR and prelist addresses were checked twice by the USPS between the time address registers were delivered to the district offices and Census Day, in the "casing" and "time of delivery" checks. Each of these operations is discussed below.

The following chart shows which operations were performed for TAR and prelist areas, or both.

TAR areas	Prestlist areas	Both areas
Address lists purchased from commercial vendors. Oct. 1978-April 1979.	Census enumerators compiled address lists in the field. Feb.-Nov. 1979.	Address register(s) for each ED generated by computer and sent to district offices. Dec. 1979-Jan. 1980.
Advance post office check conducted by the USPS. June 1979.	Handwritten addresses keyed into computer. June 1979-Jan. 1980.	Census enumerators geographically coded and added addresses to registers in the "yellow card" operation. Jan.-Feb. 1980.
Additions and corrections keyed into computer. July-Sept. 1979.	Final computer geocoding of commercially purchased addresses. Sept. 1979-Jan. 1980	Census enumerators updated address lists in precavass operation. Feb.-Mar. 1980, in most areas.
		USPS conducted casing check. March 5, 1980.
		USPS delivered questionnaires and performed time-of-delivery check. March 28, 1980.
		CENSUS DAY, April 1, 1980.

Address List Preparation in TAR Areas

Two of the major steps involved in creating complete and accurate mailing lists in TAR areas—the purchase of lists from commercial vendors and the advance post office check—will be discussed in this section. These operations occurred prior to the opening of the 1980 census field offices. Other operations for improving address lists in TAR areas, such as the "yellow card" operation, precavass, and the USPS' casing and time-of-delivery checks, occurred after the census district offices opened; they are outlined later in this chapter.

Purchase of lists from commercial vendors—For city-delivery areas with GBF/DIME file coverage, the Bureau took advantage of existing computerized address lists compiled by private companies. Because of deficiencies in these lists, several major operations were designed to improve them, including the advance post office check, precavass, etc. Starting with these lists and subjecting them to updates and improvements was considered less costly than the alternative of having enumerators start from scratch. Computerized address lists were available only from private companies for 1980. The USPS generally did not have such comprehensive lists and, where it did, it could not by law provide them to the Census Bureau.

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The Bureau requested that potential vendors submit proposals in early August 1977, with a September 6, 1977, deadline for submissions. A formal evaluation of the seven proposals submitted was conducted from October 1977 to June 1978. Only four of the submittals were considered, because three vendors did not offer unique apartment designations in multiunit structures, a prerequisite for the Bureau's needs; two other vendors offered apartment designations for only some SMSA's and were under consideration for contract award only in those areas.⁶

Five factors were considered in determining which proposals to accept, and points were awarded for each factor, up to a total of 200.

1. Coverage, or the completeness of an address file, measured by matching a sample of a vendor's file to an independent list. 80 points.
2. Quantity, or the total number of SMSA's and addresses offered. 50 points.
3. Cost, or price per address. 40 points.
4. USPS carrier route number availability and quality. 10 points. (Having a carrier route number with each address allowed the Bureau to sort addresses by carrier route before asking the USPS to check them. If the USPS had had to sort the addresses by carrier route, it would have charged the Bureau for this service.)
5. Previously demonstrated capabilities:
 - a. Relevant experience of the company in producing comprehensive address files. 10 points.
 - b. The individual experience and expertise of the company's key personnel. 10 points.

For the purposes of the evaluation, SMSA's were grouped into 18 clusters, first on the basis of whether a particular vendor could supply addresses for an SMSA, and then by the size and geographic location of the SMSA. Entire clusters were awarded to the vendors deemed to have the best files for the clusters.

In late September and early October 1978, the Bureau awarded contracts to three vendors for computerized files containing addresses for 276 SMSA's. The vendors were asked to delete from their files addresses with ZIP Codes not in TAR areas; however, when one vendor fell behind in delivery of files, the Bureau deleted the non-TAR addresses itself. In order to improve the coverage in some SMSA's, the Bureau matched the files of the vendor that won the contract for those SMSA's against files from a second vendor; addresses unique to the second vendor's files were added. In all, the address files received from the vendors contained about 42.5 million unique TAR addresses.

The purchased files began arriving from the vendors in the late fall of 1978, with the Bureau receiving half of the total by the end of January 1979, and addresses for all 276 SMSA's were received by the last week in April. Once the address files were on hand, they were analyzed to see if there were any major problems, then put in a standard format so they could be geographically coded. Prior to final geocoding, the files were updated in the advance post office check.

Advance post office check—Over the course of the census, the USPS aided the Bureau in three important ways: It checked the

⁶An appropriate address for TAR areas consisted of house number, street name (including directional prefixes and suffixes), and apartment designation (where relevant), in addition to post office, State, and ZIP Code.

accuracy and completeness of address lists, delivered questionnaires to households, and returned the forms to the district offices. The Bureau reimbursed the USPS for the work it performed.

The advance post office check (APOC) was one of the three USPS updates of addresses for the 1980 census. Originally intended to cover all mail census areas, it had to be limited to TAR areas because of delays in preparing computerized prelist address lists. Postal carriers sorted labeled address cards supplied by the Bureau into their mail cases in the post offices and reported addresses for which there were no cards. Address labels, printed by a private company for each of the 42.5 million purchased TAR addresses from computer tapes supplied by the Bureau, were affixed to buff-colored address cards (forms D-700A; see app. 3B for facsimiles of APOC materials) in the Bureau's Jeffersonville, IN, facility. The USPS distributed the labeled cards to individual post offices through its bulk mail centers and management sectional centers.

The APOC was conducted in two waves—the first, the week of June 4-8, 1979, and the second, the week of June 20-26, 1979. Most of the work was done in the first wave. Address files for some SMSA's were being matched against 1970 census address files to enhance their coverage; labeled cards for these were not completed in time for the first wave, and so were checked in the second wave.

When a carrier found an address on his/her route for which there was no address card, he/she was instructed to fill out a blue card—the "Post Office Report of Missing Address" (form D-702). If an entire multiunit structure or several units at the structure were missed, the carrier was to fill out one blue card for the basic address (house number and street name) and write the apartment designations on the back. In this way, valid addresses not included in the purchased files were added to the Bureau's address list.

In addition to filling blue cards for missed addresses, the carriers were instructed to check the mailing addresses on the buff cards for accuracy and completeness and to make corrections, as necessary. The carriers also marked cards "duplicate," "business only," or "undeliverable."

As a result of the APOC, over 5 million addresses were added to the computer files, and more than 5 million corrections were made. An unexpectedly high number of corrections (about two-thirds of the total) had to be made to carrier route numbers. The number of TAR addresses increased as a result of APOC from 42.5 million to 47.5 million. This number included some 900,000 addresses the carriers marked "business only" or "undeliverable," and 300,000 they had marked "duplicate."

The adds and corrections were keyed onto computer tape in the Bureau's processing centers in New Orleans, LA, Laguna Niguel, CA, and Jeffersonville, IN. These correction tapes were later merged with the computer address files that had been purchased originally. APOC materials—blue cards, address cards with corrections, and cards for addresses that were undeliverable or duplicates, etc.—were returned by the USPS to New Orleans for check-in and processing; some of these were later shipped to Jeffersonville and Laguna Niguel for processing. The check-in of returned APOC materials proved to be more difficult than expected. They were not returned in an orderly fashion—that is,

⁷See Ch. 9, "Research, Evaluation, and Experimentation," for evaluation of USPS operations during the 1980 census.

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by ZIP Code within SMSA—but came back in bits and pieces of carrier routes. Materials were not received for a few carrier routes and special efforts had to be undertaken to track down cards for some entire ZIP Codes that were not returned.

In general, the materials were returned slowly from the post offices, and this delayed the start of production keying until early July 1979.⁸ Keying was completed in early September. One problem that slowed the keying operation was that instructions for filling address cards were not followed uniformly by carriers, so a prekeying clerical edit of the cards had to be instituted. One problem was that carriers had designated as special places a number of addresses that were not special places by the Bureau's standards. (See chs. 1 and 5 for special places.)

Experience from the 1970 census and test censuses for 1980 showed that a significant number of the addresses the postal carriers had marked "business only" or "undeliverable" (the latter were called "nixies" by the USPS) were actually deliverable residential addresses. Therefore, the "business only" addresses and "nixies" from APOC were sent back to the USPS on hand-addressed cards (form D-700C) on a flow basis from July to September 1979, in an operation called the "nixie" check, or APOC II. A sample of good addresses (i.e., those that had not been marked "undeliverable" or "business only" in APOC) was included so that carriers would not know which were good or had been previously "nixed," and thus would have to check each address.

The purpose of the "nixie" check was to see whether the addresses (other than the cover sample) would again be marked "business only" or "undeliverable." Addresses that were so marked a second time were called "double nixies" and were deleted from the master address files; those that were not were left in the files. The deletion operation could not be completed in time to prevent the "double nixies" from being printed out in the address registers along with all the other addresses; lists of "double nixies" therefore were sent to the 1980 census field offices where they were to be deleted by hand.

Once the advance post office and "nixie" checks were completed and the computerized address files had been updated for a particular SMSA, the addresses were ready to be assigned geographic codes.

Geocoding addresses—In the 1980 census, geographic codes were assigned to addresses either by computer or manually. In prelist and conventional census areas, geographic codes—district office, ED, and block number—were assigned by enumerators using census maps in the field. In TAR areas, most addresses were geographically coded (geocoded) by computer. This geocoding operation required, in addition to purchased address files, computerized geographic base files (GBF's) that contained the geographic codes for a particular range of addresses, and a computer system for matching the address files to the base files.

The major objective of the geocoding operation for the 1980 census was to code accurately as many of the purchased ad-

dresses as possible. The addresses that could not be coded by computer were printed out on "yellow cards." These were sent to the district offices to be geocoded either by office clerks or field enumerators.

Another major goal, of course, was to complete computer geocoding in a timely fashion so that subsequent dependent operations could be completed; these included grouping of addresses into ED's, printing address registers, and affixing labels (containing an address and geographic codes) onto questionnaires. The final geocoding was conducted on a flow basis by SMSA, beginning in October 1979 and ending in early January 1980.

Before the address files were matched to the GBF/DIME files, they were analyzed for problems and the addresses were standardized to facilitate matching, i.e., the components of the address were placed in their correct fields and properly formatted, assigned standard abbreviations, and then put in sequence for matching. The computer program used to match addresses was an algorithm that required an exact character-by-character match between the address record and GBF/DIME file before assigning geographic codes to the address file.

There were essentially two computer matching operations. All addresses were matched initially to the GBF/DIME file. Addresses that failed to match this file exactly, or matched but the GBF/DIME file contained geocoding error flags, were compared with a "dictionary" file. The "dictionary," which was initially derived from the GBF/DIME file and updated several times thereafter, contained alternate or variant street name spellings.

Unlike the match to the GBF/DIME file, which needed to be exact, the match to the "dictionary" introduced equivocation into the geocoding system. Equivocation involved coding where an exact match was not possible but where limited differences could be accepted, for instance, when vowels "i" and "e" in a street name were switched or when a final "s" in a street name was dropped. If an address matched in the "dictionary," the related GBF/DIME file name was appended to the address and used in a rematch to the GBF/DIME file. Equivocation was allowed on only one address element (i.e., direction, name, or type) and the subsequent rematch had to be exact on all remaining address elements.

Addresses that remained unmatched were grouped into unique ZIP Code/street name combinations. If the number of addresses in one of these clusters met a predetermined threshold, the cluster underwent clerical review. The remedies that could be undertaken included relating clustered addresses to GBF/DIME file addresses as variant spellings via the "dictionary," correcting the GBF/DIME file address records, and adding missing streets and "building name" records to the GBF/DIME file.

There were several reasons why addresses on the address file might not have matched to the street segments on the GBF/DIME file; the updates to the GBF/DIME file and the "dictionary" were attempts to overcome these factors:

1. An address would match on street name, but not on a house number range.
2. The address file may not have contained directional indicators such as "north" or "south" to distinguish an address segment, even though the direction may have been part of the street name and was contained in the GBF/DIME file.

⁸About 500 rented Entrex keying machines were delivered and installed in March-May 1979. Most of the machines, which were used to key both TAR APOC and prelist addresses, were installed in the New Orleans and Laguna Niguel processing offices, but there was also a limited amount of keying capacity in Jeffersonville, IN, and in the Kansas City, KS, regional office. TAR APOC keying was conducted in New Orleans, Jeffersonville, and Laguna Niguel, and prelist keying was done at these three sites plus Kansas City.

3. Some street name spelling differences—such as Collins Road and Callings Road—could not have been accounted for in the “dictionary” without clerical intervention. Furthermore, some streets were known by two or more different names, only one of which appeared in the GBF/DIME file.
4. Some street names or other deliverable addresses may not have been contained in the GBF/DIME file, or residual errors remained in the GBF/DIME file.
5. In some instances, apartment units may have been assigned to a building name rather than to the house number/street name of the structure.
6. There were clerical errors in transcribing information from maps to the GBF/DIME file or to the master reference file.

Many of the nonmatches could have been resolved had there been more time to conduct clerical research of the problems.

Address files were matched to GBF/DIME files in three cycles, the dates of which were as follows.

Cycle	Began	Ended
1	Jan. 1979	July 1979
2	Sept. 1979	Jan. 1980
3	Oct. 1979	Jan. 1980

The first cycle was essentially a trial run to determine the extent to which the GBF/DIME file covered the address file, to determine the clerical workload for uncoded address clusters, and to update reference files. It was during this cycle that the “dictionary” file was created.

Parallel to this geocoding cycle, the labels to be attached to the address cards for APOC were produced. The APOC corrections and additions were incorporated into the address file for matching to the GBF/DIME file in the second cycle. With the additions and corrections from APOC (no addresses were deleted from the files), the number of addresses grew from the 42.5 million at the start of APOC to 47.5 million by the final cycle of geocoding. Only 77 SMSA's that still had a sufficiently high non-coding rate after the second cycle were run through a third match.

Had all the operations necessary for geocoding been completed sooner, geocoding could have been structured so that more time would have been allotted for clerical resolution to adequately complete the job, and all three cycles would have been run for all areas. These operations included receipt of original address files from the vendors, incorporation of the results of APOC I and II, and completion of final GBF/DIME files and the MRF.

Of the 47.5 million addresses for which a match to GBF/DIME files was attempted, 40.9 million matched and were coded while 6.6 million failed to match and were not coded. The uncoded addresses included about 640,000 that were determined to be non-TAR addresses. The coding rate for TAR addresses only was 87.2 percent, with a range of 69 percent for the SMSA with the lowest rate to 97 percent for the one with the highest. The coding rate was 90 percent or above in about one-fourth of the SMSA's, 80 percent or above in five-sixths, and above 70 percent in all but one.

Address List Preparation in Prelist Areas

Between February and the end of November 1979, census enumerators listed some 35 million addresses in prelist areas—

mail census areas for which addresses were outside city-delivery areas and/or there was no GBF/DIME file coverage.⁸ When the listing was completed, the registers containing the listed addresses were boxed and shipped to one of the Bureau's processing centers where the listings were keyed onto computer tape. Once that had been done and various checks were performed, the file was used to generate computerized products: (1) address labels for attachment to the questionnaire mailing packages and (2) printed address registers for use as master control lists in the district offices.

The scope of the prelist operation was much larger in 1980 than in 1970, when only about 7.2 million addresses were prelisted. This was largely due to the expansion of the mail census method into areas, such as rural sections of the South, that were not covered in the 1970 prelisting operations.

Prestlist cost about \$33.6 million. This exceeded the amount budgeted by nearly \$4 million, largely because there were 5 million more addresses listed than anticipated.

The prelist operation started behind schedule, advanced slowly, and went on considerably longer than anticipated largely because of delays in the production of the maps essential for carrying out the field work. In addition, there were the usual problems in a massive field operation: hiring and retaining staff, low production rates by the listers, finding people at home, etc. As originally planned, the operation would have started in mid-January, progressed on a flow basis, and finished in time to ship the address registers from the prelist offices to the processing centers and complete keying by the first week in October 1979; however, only one-third of the keying had been finished by that time, and it continued into January 1980.¹⁰

The listing operation was to have been completed in four overlapping waves beginning at 1-month intervals. The prelist workload in several entire States was to have been accomplished in each wave, with about 70 percent of the work scheduled for the second and third waves. The wave structure was based on the expected availability of maps, weather conditions in various areas, and the desire to distribute the keying workload over a period of months. As noted earlier, the map delays caused major changes in the prelist schedule, so that both the field work and keying were compacted into a shorter time span. The wave structure essentially collapsed and areas were prelisted on a flow basis based primarily on the availability of maps. In some States, metropolitan map sheets were available sooner; in others, the nonmetropolitan map sheets were available sooner. Thus, within States the work was sometimes divided between MMS and non-MMS, a division that created organizational complications for the field offices. The delay in the field operations also caused staffing problems because it was difficult to pinpoint when recruits could be brought on. An unexpectedly large amount of map work, such as cutting out and mounting individual ED maps, had to be completed in the field offices. In addition to the maps being late, some were of poor quality because of problems in legibility and missing detail.

As a result of the prelist scheduling problems, a planned APOC for prelist addresses was canceled, and the APOC was conducted only for TAR addresses. The advance check of prelist addresses

⁸For more detail, see the unpublished Field Division report, “Field Operations Report of the 1980 Decennial Census: Prelist,” June 1981.

¹⁰Some 1.5 million addresses were not keyed for various reasons—illegible, inadvertently overlooked, not received in time, etc.

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had been planned as a device to improve the quality of the listings, and additions and corrections to the lists would have been keyed into the system as they were for TAR areas. The prelistings were, however, updated in the casing and time-of-delivery checks.

Procedures—Prestlist procedures were tested extensively in preparatory tests for the 1980 census—the Rural Listing Test, the Travis County, TX, Pretest, the Data Collection Unit Test, and the Rural Relist Test (see ch. 2)—and final prestlist procedures were formulated based on the results of these tests. The procedures received a formal run-through in the dress rehearsal census in Richmond, VA. The major improvements over the 1970 procedure were the use of a set method of travel (canvassing clockwise around every numbered block, in a systematic fashion) and instructions to knock on every door.

After training, each enumerator was assigned to list one or more specified ED's, using a map for the ED and the Prestlist Address Register (form D-101; see app. 3C for format) as the basic tools. The enumerators' instructions were in the back of the register and listed the following duties.

1. Canvass each assigned ED by systematically traveling all streets, roads, paths, etc., and look for every place where people live or could live.
2. Knock on the door of every place where people live or could live, and obtain the mailing address for each living quarters, whether occupied or vacant. If no one is home, obtain the address by inquiring of neighbors, landlords, etc., or by observation.
3. List the mailing address of each living quarters in the address register. For occupied living quarters, also record the full name of the occupant who owns or rents the living quarters.¹¹
4. Indicate the location of each living quarters on the ED map by making a spot and writing the serial number beside it.
5. Print a location description in the address register for each address that does not have a house number and street name (i.e., rural-route addresses).¹¹
6. Record the number of living quarters at each basic street address.
7. List each special place in the ED on a yellow special-place address listing page, and spot its location and control number on the ED map.
8. Update the map as necessary by drawing in new streets, deleting nonexistent streets, and correcting street names, types, directional prefixes and suffixes, etc.

The enumerators were instructed to canvass one block at a time in a clockwise direction, listing only the living quarters—both housing units and group quarters—on their right, including interior roads. They were to look for or inquire about concealed or unusual living quarters. If the enumerator could not obtain an

adequate mailing address during the first visit, either by inquiry or observation, he/she was instructed to list as much information as possible and to make one return visit to complete the listing.

Quality control—The enumerators' work was given a "first review" and a "final review" by a crew leader. The first review was conducted 3 or 4 days after an enumerator began listing in an ED, to see whether the enumerator was canvassing systematically, map-spotting, entering complete mailing addresses and special places, and meeting the production level of at least 60 listings per day in rural areas and 100 per day in urban areas. The failure of enumerators to meet production levels was a common problem throughout the enumeration. Some of the reasons were that many did not work the prescribed 8-hour day, there were high turnover rates, and not enough time was allotted for training enumerators to use the census maps. (Problems with the legibility of the maps are discussed above.)

In the final review, which was conducted when an enumerator completed an ED, the crew leader answered 13 specific questions about whether the address listing pages and ED map had been completed as instructed. The ED assignment failed and corrective action was taken if there were one or more "No's." Also as part of the final review, the enumerators' work underwent a quality control (QC) procedure performed by a prestlist QC enumerator. The QC enumerator made an advance listing of 24 addresses (usually 6 in each of 4 blocks marked on the ED map by the crew leader) in each ED designated for QC. When the listings of the regular enumerator were completed, they were compared to the QC enumerator's "listing and matching record." If the regular enumerator's list differed from the QC enumerator's by no more than one address, the ED passed the quality control. But if two or more addresses were not listed by the regular enumerator, the QC enumerator checked the possible errors in the field. Any missing addresses were added to the address register. If it was verified that there were two or more errors, the address register for the ED in question was given to another regular enumerator to be "repaired" and the ED was recanvassed. If four or more addresses had been missed by the original enumerator, he/she could be dismissed.

Organization and staffing—There were 26 prestlist offices in addition to the 12 regional census centers (from which prestlist operations were also conducted) for a total of 38 sites. (See app. 3D for locations.) Space requirements ranged from 1,700 to 2,800 square feet, with an average size of about 2,200 square feet.

Each office was under the supervision of a prestlist office manager. Some of the managers were hired locally and some were Bureau regional office employees. A senior office clerk was in charge of payroll and personnel matters and was assisted by a number of office clerks. Office processing operations, which included preparing field maps, delineating field assignments, checking in and controlling completed assignments, and shipping materials to the keying centers, were under the control of an office operations assistant, aided by numerous clerks. The actual listing and other field operations were under the supervision of field operations assistants (FOA's). Each FOA generally was assigned 10 crew leaders, who were responsible for training and supervising about 13 enumerators each. There was one QC enumerator for every two crew leader districts.

¹¹In addition to post office, State, and ZIP Code, an adequate mailing address in areas where mail delivery was by house number and street name included: full name of the occupant who owned or rented the living quarters (if occupied), house number, and apartment number or designation. In areas of rural route delivery, an adequate mailing address included: full name of the occupant who owned or rented the living quarters (if occupied), route number, box number (if applicable), and a location description of the living quarters.

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The most serious problem in recruiting and hiring prelist workers was the delay in the operations because, as mentioned above, it was not possible to tell candidates exactly when a job would begin. To recruit job candidates, the Bureau relied on State employment services, free advertising, and, to a lesser extent, paid advertising. In order to qualify, an applicant had to pass a written test, which was longer than that used to hire field staff in 1980 but similar in content.¹² During the first 2 months, test score rankings of qualifying applicants were used as the basis for hiring. For the remainder of the operation, random selection was made from the pool of applicants who had passed the qualifying test.

The number of positions and the pay rates for the various job titles were as follows.

Position	Number	Hourly wage ¹³ (dollars)
Office manager	37	8.45
Field operations assistant	240	5.65
Office operations assistant	37	5.65
Senior office clerk	37	4.30
Clerk	865	3.35
Crew leader	2,395	4.25
QC enumerator	1,198	3.85
Enumerator (hourly rate)	(as needed)	3.60
Enumerator (piece rate)	28,750	per listing 0.20 per mile, time en route 0.29

The enumerator piece rates were the same in all parts of the country, and were designed to yield a targeted hourly wage of \$3.60. Some enumerators were paid hourly to do "cleanup" work. All employees were paid biweekly.

Toward the end of prelist, a bonus system was instituted to help increase production. In urban areas, enumerators who listed 1,000 or more addresses in a 2-week pay period received a \$50 bonus; in rural areas, the same amount was paid for listing 600 addresses in a pay period. Use of the bonus system was at the option of each region, and it was not used in all areas. There was no evaluation of the efficacy of the system.

Keying—Prestlist keying was conducted in four sites—Laguna Niguel, CA, New Orleans, LA, Jeffersonville, IN, and Kansas City, KS. Keying began in early June 1979 and was completed in January 1980.

When shipments of address registers from the field offices reached the processing centers, clerks verified the completeness of each shipment. As the individual registers were checked in, they were inspected and any damage was repaired. Prior to keying, the registers were stored in a secure "library." As a first step in the keying flow, the registers went through a clerical screening unit where the ED numbers on the registers were verified as "valid" (i.e., in the MRF), the control counts of addresses in the registers were checked, and the handwritten entries were screened to see whether they were readable and keyable. Any problems identified were resolved in the screening unit or referred to a special problem-solving unit.

The addresses were keyed, matched to a preliminary version of the precensus MRF to determine the validity of ED and block numbers, and put onto an output tape that was sent to Bureau

¹²The supervisory test was cut from 2½ hours for the 1979 prelist to 1 hour in 1980; the nonsupervisory test, from 1½ hours to 1 hour. (See ch. 5 for tests and other selection aids.)

¹³Pay rates were increased on Oct. 1, 1979, by \$.25 to \$.60 for each position.

headquarters for computer processing. Diaries identifying any problems found in the keyed output were returned to the processing sites for resolution. Once the output tape for an address register was accepted through the headquarters computer processing, the original handwritten prelist address register could be packed for shipment to the appropriate district office for use as a reference in 1980 field operations. The result of the headquarters processing was a computer-generated, printed address register, the pages of which were assembled at the processing sites.

The slowness of the listing operation (which caused delays in keying), the need to ship the keying stations to the regional census centers in the fall of 1979 (where they would be installed for use in the 1980 field operations), and the competing demands on the Bureau's computer capacity raised the serious possibility that the keying of prelist addresses might not be completed. This would have required the use of hand-addressed registers and the hand-addressing of questionnaires for the mailout for each ED not keyed and would have made the work in the 1980 district offices more difficult.

Several steps were taken to ensure that keying would be completed. First, the shipment of keying stations to the regional census centers was postponed. Second, in a move to accelerate the operations, keyers were instructed to stop keying certain information in the prelist address registers. The keying of location descriptions for housing units in areas with rural route delivery was stopped. The location description would have aided a followup enumerator in finding a housing unit for which no questionnaire had been returned. There had been problems with keying the location description in any case—the descriptions were to be keyed into a 35-character field, and the keyers were instructed to key the first 35 letters of the descriptions. Thus, if enumerators had written lengthy descriptions, parts would not have been keyed.

As another speed-up measure, clerks were instructed to stop keying household names for house number/street name addresses. However, this instruction was mistakenly applied, in some cases, to names for rural route addresses. Names of householders are an important element of an address in rural route delivery areas and, where the names were not keyed, enumerators had difficulty in determining which housing units had returned questionnaires.

Because of the shortened time for keying, many of the computer-generated registers used in the district offices after Census Day did not have householders' names or housing-unit locations where street addresses were deficient, complicating both mail delivery and followup. This situation, together with concerns about the prelisting operation's quality and completeness, led the Bureau to authorize a canvass of a number of prelist areas during the vacancy/delete followup (unit status review; see ch. 5). This involved traveling all of the ED's, comparing the addresses and housing-unit locations with the address registers and the maps, correcting the records as necessary, and enumerating by personal interview every household and housing unit that the prelisting operation had missed. This work began in late June but was discontinued in August because of time and budget constraints.

The original handwritten prelist address registers were sent to 1980 census district offices, along with the computer-generated address registers. They served as references, par-

ticularly in cases where the location descriptions or names had not been keyed or in the few areas where the addresses were not keyed at all.

Address and Geographic Reference Materials for Field Offices

Once the computerized files containing TAR and prelist addresses and the precensus MRF were ready, various products essential to the work of the census field offices could be computer-generated. These products, which included address registers, geographic aids, and address labels, were produced in a 4-month period from November 1979 to February 1980.

One or more master address registers were produced for each of 277,000 ED's in mail census areas.¹⁴ The registers contained a listing for each residential address known to be in an ED at this stage of the census—40.2 million addresses in TAR areas and 34.8 million in prelist areas. The address register pages were printed and assembled in the Bureau's Jeffersonville facility, whence they were shipped to the field offices. (Master address register cover and listing pages are reproduced in App. B, "Data-Collection Forms," of this publication series.)

A number of computer-generated geographic aids also were produced for use in the census field offices. One of these was the Block Header Record (form D-327), produced by meshing the MRF with GBF/DIME files; it was used to assign geographic codes manually to those addresses added in various operations subsequent to computer geocoding. Another tool was the Preliminary ED Directory (form D-3018), which was used to plot ED boundaries, check geographic relationships in the field, and correct maps. This directory showed the census tract and block numbers and the expected number of housing units for each ED. It was produced using the precensus MRF; as the MRF went through its various revisions, similar updated listings were generated. (Other geographic aids used in the field offices are discussed in ch. 5.)

Address label tapes, containing the 75 million addresses that were printed in the address registers were produced. These tapes were sent to contractors who produced address labels to be affixed to census questionnaires.

Address List Work in the Field Offices

One of the major jobs of the field offices from the time they opened in January 1980 until Census Day was the enhancement of the master address registers. Through a series of updates conducted by census enumerators and the USPS, addresses were added (or, less often, deleted) and corrections were made to the registers. Each of these operations is outlined below.

"Yellow card" operation—As mentioned above, the Bureau attempted to geocode all TAR addresses by computer, but it could not code about 6 million of them to the correct ED and block. Each uncoded address was printed on a form D-374, ED and Block Followup Card, which, being yellow, was called a "yellow

card.¹⁵ Since these addresses were not coded to ED and block, they were not printed into the address registers and questionnaires were not labeled for them. Because of the unexpectedly large number of "yellow cards," some preliminary coding was attempted in the processing centers and regional centers before shipping the cards to the district offices. In late January and February 1980, the district offices used local knowledge and geographic references, such as a list of records deleted during the GBF/MRF match, to try to geographically code the yellow cards. If a yellow card could not be coded in the office, it was sent to the field to be coded by an enumerator who attempted to locate the address on a census map. Once the yellow cards were coded to the correct district office, ED, and block, office clerks checked to see whether the addresses were already in the address registers and, if not, added them. For each address added to the registers, a questionnaire mailing package was addressed by hand and sent to the appropriate post office for the March 5 casing check. The district offices processed 6.1 million yellow cards, 247 percent more than the number originally estimated. Of the 6.1 million, clerks geocoded 3.9 million by reference to maps, and enumerators had to check the remaining 2.2 million by personal visit.

Precanvass—In February and March 1980, census enumerators working out of the district offices undertook an update of census address lists in TAR areas only, in an operation called "precanvass." Precanvass was originally scheduled to occur prior to the "yellow card" operation, but had to be postponed due to delays in completing maps and in compiling address registers. When the district offices opened in January, they received a master address register and a precanvass address register (form D-103) for each ED in the office's area. The master address register contained an address, including apartment designations (Apt. 101, 102, etc.) in multiunit structures, for each known geocodable residential living quarters in the ED. The precanvass address register was produced at the same time as the master address register and contained only basic street addresses (house number and street name); for multiunit structures, it showed the number of units at the address rather than listing each unit separately. For quality control purposes, 5 percent of the known addresses were omitted.

During precanvass, enumerators traveled every street in each ED to:

1. Verify that the basic address for every residential structure located in the ED was listed in the precanvass address register and coded to the correct block, and add to the precanvass address register any basic addresses that were not listed. If there were several units at the added address, the designation of each was to be recorded.
2. Verify that the number of housing units given for each basic address was correct. If a multiunit structure was found to contain more units than were listed in the precanvass address register, the enumerator recorded the apartment designations for *all* units.
3. Delete nonresidential and nonexistent addresses, and addresses that should have been listed in another ED.

¹⁴The number of ED's increased during the census due primarily to splits necessitated by late boundary changes. There were 28,000 precensus ED's in conventional areas, for a total of 305,000 precensus ED's. Blank address registers with the appropriate district office and ED labels were assembled for the conventional ED's.

¹⁵Not to be confused with the cards used in the "nixie" check (form D-700C), which also were yellow.

Chapter 3. Geography, Addresses, and Questionnaire Printing and Labeling

Once the field work was completed, the precanvass address registers were returned to the district office where additions and corrections were made to the master address registers.¹⁶ Questionnaires were addressed for housing units added to the registers and sent to the appropriate post office. Precanvass was not completed in many areas in time for the casing check, as originally planned.

The precanvass operation had been tested in the Travis County, TX, Camden, NJ, and Oakland, CA, pretests and was used in the dress rehearsal censuses in Richmond, VA, and lower Manhattan, NY. As a result of the tests, it was believed that precanvass would significantly improve the coverage of housing units in the census. (See ch. 2 for a discussion of the pretests and dress rehearsals and ch. 9 for 1980 census operations evaluation.)

Casing and Time-of-Delivery Checks

Census questionnaire mailing packages with computer-generated address labels were sent from the mailing-package assembler to post offices in February 1980 for the casing check on March 5, 1980; where possible, so were the questionnaires that were hand-addressed in the district offices for addresses added to the registers from precanvass and "yellow cards." In the casing check, which unlike precanvass and the "yellow card" operation was performed for both TAR and prelist areas, postal carriers sorted addressed questionnaires into the proper slots in their delivery cases and determined whether there was a questionnaire mailing package for each residential address on their routes; they were not supposed to deliver the questionnaires at that time. If there was a housing unit address within their delivery area for which there was no questionnaire, they filled out a blue card, Form D-701, "Post Office Report of Missing Delivery."¹⁷ If there were two or more mailing pieces for the same address, one of them was marked "Duplicate" and was returned to the census office, along with questionnaires that were "Undeliverable"—those with incomplete addresses or those addressed to nonexistent housing units—and the blue cards. Appropriate actions were taken in the district offices to update the master address registers based on the results of the post office check, including determining the correct ED and block, and adding to the registers addresses on blue cards that were not already listed. Addresses that belonged in another ED, were nonexistent, or were for nonresidential structures were deleted.

The final post office check before Census Day was conducted on March 28, 1980, at the time the questionnaires were delivered, and was called the "time of delivery" check. Questionnaires had been addressed and sent to the post offices for addresses added (on blue cards) during the casing check. The procedures for the time-of-delivery check were essentially the same as for the casing check, except that the questionnaires were actually delivered. Again, the master address registers were updated in the census offices based on the results of the time-of-delivery check and, when addresses were added, questionnaires were addressed and mailed out. The district offices reported processing 7.3 million blue cards, 27 percent more than originally estimated.

¹⁶Conducting the "yellow card" operation prior to precanvass meant having to match precanvass "adds" to all the addresses added to the registers from yellow cards, which was difficult and complicated.

¹⁷This card was similar to the blue card used in APOC, but with a different name and form number.

The post-enumeration post office check (PEPOC), which verified the enumerators' coverage in "conventional" areas, is discussed as part of the field operation (see ch. 5).

QUESTIONNAIRE PRINTING AND LABELING

Questionnaire Printing

Over 2,500 different types of forms were designed and printed for use in the 1980 census. The most important of these were the short- and long-form questionnaires that were delivered to households on March 28, 1980. This section will detail the printing of these two forms only. (See app. B to this publication series for the description and numbers of data-collection forms.) In the remainder of this section, the short- and long-form questionnaires will be referred to by their form numbers—D-1 and D-2, respectively.

All forms were designed by Bureau staff, with the exception of the covers for the D-1 and D-2 questionnaires, which were designed by a private consulting firm. Bureau studies showed that the covers of the questionnaires might play an important part in getting people to fill out and mail back their forms. All forms used for collecting data or informing the public had to be approved by the Office of Management and Budget (OMB).

Printing of the D-1 and D-2 questionnaires was a massive undertaking, as more than 170 million forms were needed for census operations. In addition to the requirement for large quantities, the forms had to meet certain technical specifications so that, when microfilmed by high-speed cameras, they would be readable by the Bureau's film optical sensing device for input to computer (FOSDIC) machines. For instance, paper had to be of a certain weight, opacity, brightness, thickness, porosity, the ink just the right density, and the print aligned correctly, etc.

The Census Bureau, through the Department of Commerce, submitted printing specifications to the Government Printing Office (GPO) to procure printing and binding contracts for the forms. The GPO mailed the specifications to 152 printers nationwide in November 1978 and bids were opened at GPO in December 1978. Only 48 responses were received, of which 6 were seriously considered. A primary reason so few printers responded was that, due to the Bureau's restrictive paper specifications, paper mills were not able to allocate sufficient quantities of acceptable paper. A further problem was that some paper mills were on strike, and paper was in short supply. Two printers were awarded contracts to print most of the D-1's and one printer was awarded the contract for the D-2's and the remainder of the D-1's. After the contracts were let, the printers had difficulty in getting paper that met specifications from their suppliers. As a result, the GPO revised the paper specifications (with Bureau approval) so that they were less restrictive. Two additional contracts were awarded late in the printing schedule because of D-2 production problems, and additional forms were ordered when the Bureau increased its estimate of the number of housing units and the number of questionnaires needed in late 1979.

The target date for delivery of questionnaire negatives to the printers was mid-February 1979 and for completing printing, October 1, 1979. Sufficient quantities of questionnaires had to be produced in time to begin assembling them into mailing packages (or for inclusion in field-use kits) and address-labeling the packages for the March 5, 1980, casing check.

POST OFFICE CASING CHECK

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Chapter 3. Geography, Addresses, and Questionnaire Printing and Labeling

Final questionnaire negatives were supplied to the printers about a month late, in mid-March, due to delays in the clearance of the final content of the forms. Further, the printers all experienced initial problems and delays in their first shipments of questionnaires to the mailing-package assemblers because of difficulty in acquiring sufficient paper, with the FOSDIC circles on the printing plates, and with the bindery operations (where the D-2 form pages were stapled together). Delayed production and the rejection of forms that did not meet quality standards were continuing problems (particularly with the D-2's) throughout much of the 11-month printing period. The greatest problem was with the Bureau's paper opacity requirement, which ultimately had to be relaxed to reduce the amount of reflectance.

Quality control over the printing of the questionnaires was carried out by Bureau personnel from samples of printed forms drawn by the contractors. The GPO rejected the Bureau's request to allow its own staff to pull the samples at the printing locations and, thus, the accuracy of the samples was a matter of concern. The Bureau resampled the forms from one contractor. The samples amounted to about 1 out every 2,000 D-2 and 1 out of every 4,300 D-1 forms, and was chosen by taking two forms at random from every fifth carton of D-2's on a packing skid and two sets of two consecutive forms at random from every fifth carton of D-1's. All forms selected from a single skid constituted a quality-control work unit, which consisted of approximately 20 D-2's or 40 D-1's. The samples were sent to the Suitland headquarters where they were examined by Bureau personnel. If no errors were detected, the skid was accepted. If one form was in error, the contractor had the option of taking a second sample from the skid in question; however, since the skids were already packed, stacked, and tied by this time, resampling posed logistical problems and it was more convenient for the printer to treat the skids as rejects. If the original sample had contained two or more questionnaires with errors, the skid was rejected in any case.

If a skid was rejected, the contractor had the option of either reprinting forms equal to the quantity on the skid or isolating and destroying all defective forms on the rejected skid. In the latter case, the rejected skid was resampled and the Bureau had the option of having a representative visit the printing plant to observe the resampling. The resample consisted of three questionnaires pulled at random from each carton on the rejected skid.

In order to speed up the turnaround time from the 3 days experienced in the early months of QC to 1 day, the Bureau set up QC stations at headquarters, in Laguna Niguel, CA, and in New York city.

Under the original schedule, all D-1's and D-2's were to have been printed and shipped to the mailing-package assemblers or to the Bureau's processing centers for kit preparation by October 1, 1979; however, by that time only half the questionnaires had been printed. Three-fourths had been printed by the first week in November, but the last forms were not completed until the last week of February 1980.

In all, about 172.5 million questionnaires (133.5 million D-1's and 39 million D-2's) were received from the printer.

Mailing-Package Assembly and Labeling

Assembly and labeling of the questionnaire mailing packages were performed by two contractors and several subcontractors

in eight locations throughout the country. Contracts were awarded in late April and early May 1979. Assembly could not begin until sufficient quantities of all the mailing-package components were shipped to the contractors. The short-form mailing package consisted of a D-1, an instruction booklet (D-3), and a return envelope (D-8), enclosed in an outgoing envelope (D-6). The long-form mailing package contained a D-2, an instruction booklet (D-4), and a return envelope (D-8), all in an outgoing envelope (D-7). Both the return and outgoing envelopes had windows through which the questionnaire labels could be read.¹⁸

Assembly of short-form packages began in mid-July and of long-form packages, in late August, about 2 months behind schedule. In all, about 94 million packages were machine-assembled (74.6 million short-form and 19.3 million long-form) in the following time frame.

Percent assembled	Short forms	Long forms
25	September 7, 1979	October 19, 1979
50	November 9, 1979	December 7, 1979
75	December 28, 1979	January 18, 1980
100	March 4, 1980	February 29, 1980

In addition to arriving late, many of the questionnaires the assembly contractors received were warped or otherwise damaged due to loose packing or skid overloading at the printing plants. There were also problems with some of the purchased envelopes: No glue, incorrect ink color, misprinting, or misaligned folding, etc.

Labeling began in late November for short-form packages and mid-December for long-form packages. Figure 3 illustrates an address label. The labels contained an address with house number, street name, apartment designation (where applicable), post office, State, and ZIP Code, and the following information: District office (DO) code, ED number (A1), the number of housing units at the address (A2), block number (A4), form type (A5), and questionnaire serial number (A6). The return address of the appropriate census district office was also shown along with a telephone number to call for assistance in filling out the form.

The labels were printed and affixed by the same contractors who assembled the mailing packages. Label tapes, provided by the Bureau, were generated by SMSA on a flow basis as all the geocoding and ED structuring for an SMSA were completed. Delays in completing these tasks affected the delivery of label tapes and postponed the start of labeling.

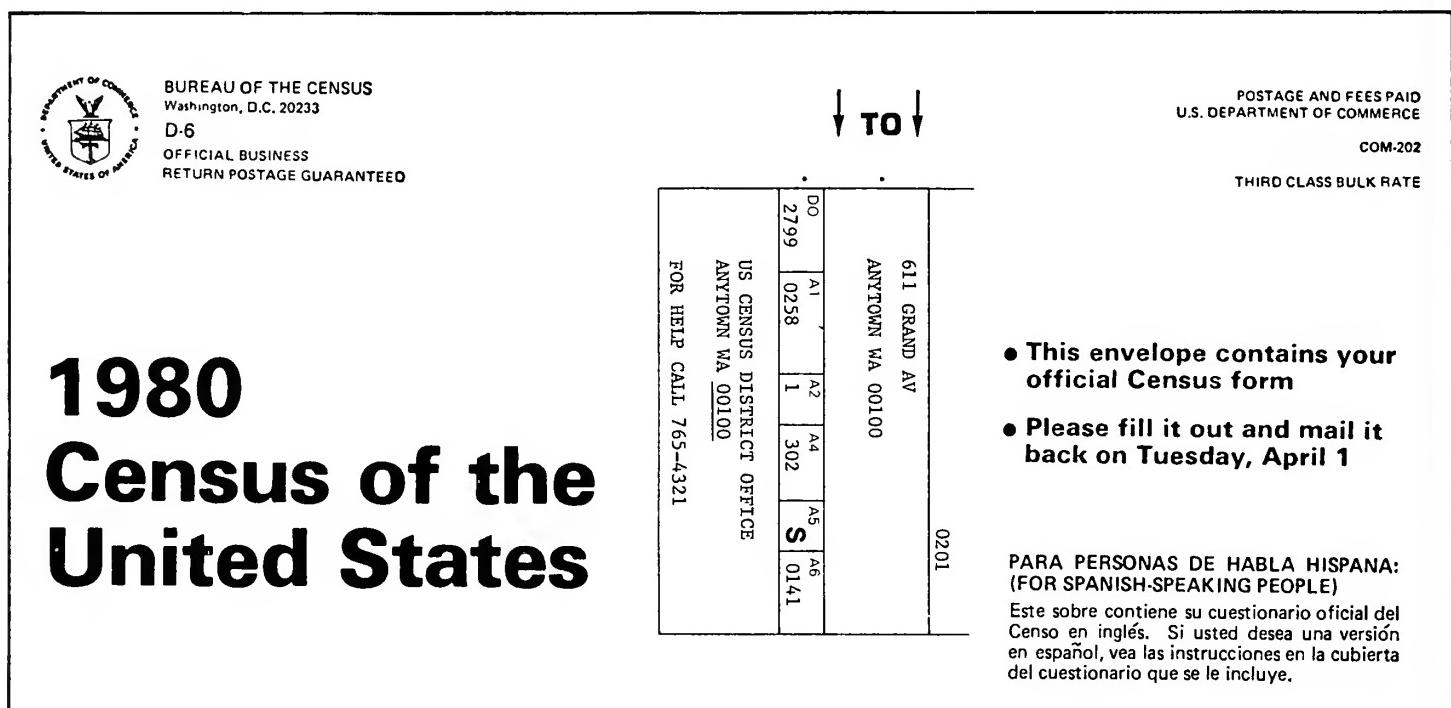
Because addressees compiled by the Census Bureau are confidential, the Bureau issued strict guidelines for the storage, handling, and disposition of the address labels by the private contractors. About 75 million packages were labeled—60.4 million short-form packages and 14.8 million long-form packages. The schedule was as follows:

Percent labeled	Short forms	Long forms
25	January 11, 1980	January 18, 1980
50	January 25, 1980	February 1, 1980
75	February 8, 1980	February 8, 1980
100	February 29, 1980	February 29, 1980

¹⁸Mailing packages for Spanish-language questionnaires and various experimental forms were also assembled by the contractors. There were no assembled mailing packages for conventional census areas; here, Advance Census Reports (D-13), which were short-form questionnaires with instructions attached, were delivered to housing units.

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Figure 3. Labeled Questionnaire in Outgoing Envelope



As with the questionnaire printing, a quality-control operation was instituted to assure that the mailing packages were assembled and labeled properly. Checks were made to see that the packages contained the correct contents, that the label printing was readable, and that the labels were centered in the windows of the outgoing envelopes and right side up. About 2 million packages prepared at one of the sites had to be repaired under Census Bureau direction because the labels straddled the window and would be torn when the householder took the questionnaire out of the envelope.

The USPS picked up the labeled questionnaires and distributed them to individual post offices in time for the March 5, 1980, casing check. The unlabeled mailing packages (about 18.7 million) were sent to the Bureau's processing centers for distribution to district offices. These packages would be hand-addressed and sent to addresses that were added to the address registers during various operations conducted in the district offices before Census Day.

Appendix 3A. Geographic Areas

Table 1. United States Geography

(Includes the 50 States and the District of Columbia; for Puerto Rico and outlying areas, see ch. 11)

Area	Number	Area	Number
Counties	13,139	American Indian reservations	*278
Minor-civil-divisions-equivalent entities	35,195	Subreservation areas for 21 reservations	228
Minor civil divisions	24,906	Alaska Native villages	209
Census county divisions	5,512	Census tracts, includes 306 crews-of-vessels tracts	43,226
Unorganized territories	273	In 1980 SMSA's, includes 286 crews-of-vessels tracts	*40,322
Places not in any MCD	4,504	Outside 1980 SMSA's, (191 counties or county equivalents and 28 partial counties), includes 20 crew-of-vessels tracts	*2,904
Places	22,529	Block numbering areas includes 19 crews-of-vessels areas	3,315
Incorporated places	19,097	Counties with BNA's	901
Census designated places (CDP's)	3,432	Block groups	154,456
Congressional districts of the 98th Congress	*435	Block group records, including splits of BG's in data files	195,564
Metropolitan areas:		Census blocks	2,458,070
1980 SCSA's	16	Census block records, including splits of blocks in data files	*2,521,130
1980 SMSA's	318	Block Statistics Program (outside urbanized areas):	
SMSA counties, including 31—part	730	Participating areas	1,215
1980 central cities	429	Regular program	548
As of June 30, 1985:		Contract program	667
MSA's ³	260	Enumeration districts	99,135
CMSA's ³	20	Neighborhood Statistics Program	
PMSA's ³	71	Participating jurisdictions	1,252
Metro counties, including 27—part	748	Neighborhoods	27,848
Central cities	516	School districts	16,075
Urbanized areas (UA's)	366		
Central cities	431		
Counties with UA's, including 620—part	657		

¹Includes La Paz County, AZ, and Cibola County, NM, which were established after 1980.

²Does not include the District of Columbia's nonvoting delegate.

³After the relationships between central urban core(s) and adjacent counties were analyzed on the basis of the 1980 census and a revised set of criteria, these areas were redefined and renamed. On June 30, 1983, SMSA's and SCSA's were redesignated as metropolitan statistical areas (MSA's), consolidated MSA's (CMSA's), and primary MSA's (PMSA's).

⁴Includes three areas that were jointly administered/claimed; does not include Minnesota Chippewa (whose landholdings comprised only tribal trust lands) or the historic areas of Oklahoma.

⁵Includes two split census tracts (one each in Maine and Vermont).

⁶For States in which MCD's were governmentally nonfunctioning, splits of block groups were based on places only; recognition of such MCD's increases records to 2,529,750.

Appendix 3A. Geographic Areas

Table 2. Number of Selected Geographic Areas

State	Counties ¹	MCD's/ CCD's ²	Places			Census tracts ⁴	BNA's ⁵	Block Groups ⁶		ED's ⁷	Blocks ⁸	
			Total	Incor- porated	CDP's ³			Total	Split		Total	Split
United States	3,139	35,195	22,529	19,097	3,432	43,226	3,315	154,456	195,564	99,135	2,458,070	252,313
Alabama	67	390	456	428	28	727	24	2,177	3,153	1,935	40,940	42,839
Alaska	23	37	294	143	151	53	8	199	218	942	3,316	3,330
Arizona	15	78	118	75	43	495	19	1,559	1,867	1,893	27,602	28,035
Arkansas	75	1,378	482	472	10	199	67	1,017	1,558	2,950	24,232	25,007
California	58	386	781	422	359	5,028	4	16,335	20,195	3,887	203,504	210,135
Colorado	63	208	291	266	25	607	65	2,392	3,025	1,292	38,227	39,094
Connecticut	8	169	119	33	86	791	0	2,320	2,590	395	30,048	30,074
Delaware	3	27	70	56	14	161	0	359	414	339	5,538	5,585
District of Columbia	1	4	1	1	0	183	0	580	591	0	4,620	4,620
Florida	67	293	704	391	313	1,837	16	6,372	8,560	2,869	134,338	137,809
Georgia	159	581	612	556	56	686	402	4,286	6,673	0	117,041	123,870
Hawaii	5	44	96	0	96	234	0	374	445	263	4,389	4,428
Idaho	44	170	200	199	1	77	31	447	542	1,742	8,095	8,239
Illinois	102	1,653	1,304	1,278	26	2,089	123	7,792	11,069	4,728	108,793	115,381
Indiana	92	1,008	580	565	15	970	54	3,340	4,328	2,941	55,926	57,409
Iowa	99	1,658	956	955	1	385	60	1,539	2,006	3,624	27,492	28,002
Kansas	105	1,548	629	625	4	333	89	1,466	1,757	2,860	29,185	29,539
Kentucky	120	474	449	425	24	431	47	1,492	2,040	2,184	19,548	20,296
Louisiana	64	488	365	301	64	713	53	2,417	3,062	2,264	41,483	42,189
Maine	16	535	112	23	89	210	6	380	410	1,445	5,888	5,894
Maryland	24	298	322	152	170	1,020	3	2,912	3,645	884	38,582	39,164
Massachusetts	14	351	213	39	174	1,199	0	4,857	5,232	852	65,340	65,398
Michigan	83	1,519	597	531	66	2,015	55	6,824	7,440	3,771	85,006	85,515
Minnesota	87	2,729	857	855	2	768	64	2,671	2,935	4,419	41,788	42,175
Mississippi	82	410	310	290	20	247	284	1,941	4,446	0	58,418	61,231
Missouri	115	1,348	943	933	10	731	67	2,996	4,086	3,483	44,993	46,437
Montana	57	192	139	126	13	63	70	597	759	1,331	11,449	11,750
Nebraska	93	1,288	535	534	1	180	44	935	1,147	2,577	18,159	18,506
Nevada	17	58	35	17	18	141	0	410	570	476	8,719	8,965
New Hampshire	10	259	62	13	49	175	19	483	518	572	8,068	8,073
New Jersey	21	567	462	333	129	1,708	0	6,227	6,543	677	91,692	91,772
New Mexico	33	130	128	95	33	211	31	903	1,065	1,558	17,994	18,195
New York	62	1,012	964	616	348	4,356	365	15,373	18,924	0	183,501	190,568
North Carolina	100	1,031	595	490	105	850	73	2,458	4,073	4,108	50,996	52,971
North Dakota	53	1,811	368	365	3	58	46	329	407	2,187	6,465	6,590
Ohio	88	1,542	1,011	939	72	2,319	92	7,656	9,484	3,434	98,363	101,221
Oklahoma	77	302	598	596	2	581	40	2,035	2,460	3,184	35,361	35,9123
Oregon	36	211	276	241	35	435	52	1,428	1,908	1,693	31,079	32,049
Pennsylvania	67	2,580	1,241	1,018	223	2,626	122	9,121	10,286	3,426	141,874	143,435
Rhode Island	5	39	28	8	20	220	0	870	939	0	15,951	15,963
South Carolina	46	294	381	265	116	502	30	1,498	2,224	2,828	27,951	29,185
South Dakota	66	1,417	318	312	6	54	38	326	380	2,296	7,795	7,899
Tennessee	95	462	379	331	48	710	71	2,368	2,970	2,819	43,069	43,994
Texas	254	863	1,169	1,112	57	2,580	151	10,096	12,321	5,606	184,315	188,394
Utah	29	91	239	222	17	235	70	974	1,358	739	14,910	15,604
Vermont	14	255	77	58	19	26	7	92	103	469	1,555	1,572
Virginia	136	496	340	229	111	1,065	231	4,092	5,520	0	71,701	72,923
Washington	39	245	355	265	90	777	72	3,038	3,965	1,495	53,303	54,550
West Virginia	55	310	273	230	43	280	15	710	1,063	1,477	12,780	13,115
Wisconsin	72	1,885	600	579	21	851	71	2,999	3,798	3,565	48,345	49,663
Wyoming	23	71	95	89	6	34	64	394	492	656	8,343	8,565

¹Includes county-equivalent entities, including cities that are independent of any county.

²Includes MCD-equivalent entities, including places that are independent of any MCD.

³Census designated places.

⁴Includes 306 crews-of-vessels census tracts; the total number of locally established census tracts is 42,920.

⁵Block numbering areas; includes 19 crews-of-vessels BNA's; the total number of "onshore" BNA's is 3,296.

⁶The total figure represents the number of unique block groups (BG's); many of these BG's are split in the 1980 census data files, and the number of such records is shown as the SPLIT figure.

⁷Enumeration districts; refers only to ED's tabulated in data-user files (i.e., excludes 211,542 ED's structured by the Census Bureau for internal operations in block-numbered areas and represented at the ED-level by block groups in data tabulations).

⁸The total figure represents the number of unique block numbers; many of these are split in the 1980 census data files, and the number of such records is shown as the SPLIT figure. For States in which all MCD's are governmentally nonfunctioning, splits of blocks are based on places only; recognition of such MCD's increases the total number of block records to 2,529,750.

Appendix 3A. Geographic Areas

POLITICAL AREAS

States

The following areas were recognized as States or State equivalents for 1980 census processing and publication: the 50 States, the District of Columbia, Puerto Rico, and 5 outlying areas—American Samoa, Guam, the Virgin Islands of the United States, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands.¹ The 50 States and the District of Columbia constitute the United States. The Canal Zone, which had been enumerated in each census from 1920 to 1970, was not included in the 1980 census. This change was a result of a 1978 treaty between the United States and Panama, which went into effect on October 1, 1979, and provided for gradual Panamanian control over the Zone. A number of other American possessions—for instance, Johnston Atoll and Sand, Midway, and Wake Islands—were either uninhabited or had counts supplied for them by other Federal agencies and were not part of the enumeration. The Swan Islands, for which data had been similarly obtained in 1970, were ceded to Honduras in 1972 and, were not included in the 1980 census.

Counties

In 48 States, the primary divisions are termed counties. In Louisiana, these divisions are called parishes. In Alaska, which has no counties, the equivalents were the organized boroughs (which cover part of the State) together with the "census areas" (for the balance) developed cooperatively for general statistical purposes by the State and the Census Bureau. Virginia had 41 cities that were independent of any of its counties and thus constituted county equivalents. Maryland, Missouri, and Nevada each had one independent city. The part of Yellowstone National Park in Montana was treated as a county equivalent. The District of Columbia and Guam had no primary divisions, and the entire area of each was considered equivalent to a county for publication purposes. American Samoa, the Virgin Islands, the Northern Mariana Islands, and the remainder of the Trust Territory all were composed of districts or islands; Puerto Rico was divided into municipios. Connecticut and Rhode Island did not have organized county governments; in these two States, the historic county areas were used for data presentation.

In all, there were 3,137 counties and county equivalents in the United States.² There were 94 such areas in Puerto Rico and the outlying areas.

Minor Civil Divisions

The term minor civil division (MCD) was applied to organized subcounty governments or nongovernmental units administered by counties in 29 States and the District of Columbia. MCD's were recognized for North Dakota in 1980, unlike 1970 when census county divisions (CCD's) were used. The other States with MCD's were: Arkansas, Connecticut, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan,

¹The Northern Mariana Islands were legally part of the Trust Territory of the Pacific Islands at the time of the census, but were treated separately for purposes of collection, tabulation, and presentation of data.

²Except where noted, the number of geographic areas apply only to the United States, and does not include Puerto Rico and the outlying areas.

Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Dakota, Vermont, Virginia, West Virginia, and Wisconsin.

The MCD's had various designations: townships, towns (in New England, New York, and Wisconsin), precincts, districts, wards, plantations, Indian reservations, grants, purchases, gores, locations, or quadrants (in the District of Columbia). In some States, all incorporated places also were treated as MCD's because they were not legally part of any MCD. In other States, incorporated places were subordinate to or part of an MCD. In several States, the pattern was mixed.

MCD boundary changes between 1970 and 1980 were quite numerous in several States—Arkansas, Louisiana, Maryland, Mississippi, Nebraska, Virginia, and West Virginia—as well as in Kansas, Ohio, and Wisconsin, where municipal annexations take territory from MCD's. There were varying numbers of changes in other States. It is estimated that, overall, about 25 percent of all MCD's experienced some boundary changes in the 1970's; many were minor adjustments.

A change for 1980 was that MCD data were presented in the printed reports for the New England States, New York, New Jersey, Pennsylvania, Michigan, and Wisconsin to the same extent as for incorporated places in other States. This policy had been applied only to the New England States in 1970. The decision for 1980 was made because the towns of New York and Wisconsin and the townships of New Jersey, Pennsylvania, and Michigan were general-purpose governments that possessed powers similar to many incorporated places.

Several types of units were recognized as MCD's in Puerto Rico and the outlying areas: in Puerto Rico, ciudades, pueblos, and barrios; in Guam, election districts; in the Virgin Islands of the United States, census subdistricts; in American Samoa, counties; in the Northern Mariana Islands and the remainder of the Trust Territory of the Pacific Islands, municipalities.

In eight States (Arkansas, Iowa, Kansas, Maine, Minnesota, North Carolina, North Dakota, and South Dakota) and the Trust Territory of the Pacific Islands, some areas were not included in any MCD recognized by the Census Bureau. Each such separate area of "unorganized territory" was treated as one or more subdivisions and given a name by the Bureau.

In all, there were about 29,700 MCD's (including about 4,500 independent incorporated places) in the United States.

In 20 States, data were tabulated for CCD's instead of MCD's and, in Alaska, by census subareas. (See Statistical Areas.)

Incorporated Places

Incorporated places recognized in the census reports were incorporated under the laws of their respective States as cities, boroughs, towns, and villages, with the following exceptions: boroughs in Alaska and New York, and towns in the six New England States, New York, and Wisconsin. These exceptions were recognized as MCD's or, in Alaska, as county equivalents. Hawaii was the only State with no incorporated places recognized by the Census Bureau.³ The towns in the Virgin Islands and the villages in American Samoa are not incorporated.

³In agreement with the State of Hawaii, the city of Honolulu, which is coextensive with the county of Honolulu, was not recognized for census purposes.

Appendix 3A. Geographic Areas

About 68 percent of all incorporated places of 2,500 people or more had boundary changes in the 1970's, as did 37 percent of smaller places, for an overall percentage of 46. For the 1980 census, there were about 19,100 incorporated places in the United States.

American Indian Reservations

The Bureau published data in the 1980 census for 275 American Indian reservations that had legally defined boundaries, based on information supplied by the BIA for Federal reservations and by State governments for State reservations. In addition, census data were tabulated for three areas comprising reservation land jointly administered and/or claimed by two reservations. Federal and State reservations were located in 33 States and many crossed State, county, MCD/CCD, and place boundaries. In addition, the Oklahoma historic Indian reservations area and the lands of the Minnesota Chippewa tribe were identified on the maps and the MRF, but were not reported in the standard series of 1980 census publications. Data were published for 115 reservations in 1970.

American Indian Subreservation Areas

Subreservation areas were identified for the 1980 census by tribal governments or the BIA. Data for these areas were not published, but were made available through a special tabulation. A total of 228 subreservation areas were identified for 21 reservations; 184 were entirely located on the reservations, 8 were located partially on and off the reservations, and 36 were located entirely off the reservations. Subreservation areas were not recognized in previous censuses.

American Indian Tribal Trust Lands

Tribal trust lands were identified for the 1980 census by the BIA. Data for these areas were not published, but were made available through special tabulations. Tribal trust lands were not recognized in previous censuses.

Alaska Native Villages

The Bureau published data for 209 Alaska Native villages recognized under the Alaska Native Claims Settlement Act, Public Law 92-203. The State of Alaska reviewed and updated the list of these villages. Alaska Native villages were not recognized in previous censuses.

Congressional Districts

Data were published in the *Advance Reports*, PHC80-V, for the 435 congressional districts based on their boundaries at the time of the 1980 census (the 96th Congress, 1979-81). These boundaries also were in effect for the 97th Congress (1981-83). On December 31, 1980, the Director of the Census submitted to the President, through the Secretary of Commerce, the official State population totals and the number of seats in the House of Representatives to which each State was entitled on the basis of the 1980 census results. In February and March 1981, small-area data were delivered to the States for use in redrawing boundaries (see *Election Precincts*). Districts were redrawn in most

States in 1981 and 1982 so that the districts for the 1982 elections (the 98th Congress) would have nearly equal populations. After the congressional district boundaries were redrawn, the Bureau tabulated data for the new districts; these appeared in the series of reports PHC80-4, *Congressional Districts of the 98th Congress*, and on summary tape files 1D and 3D.

Election Precincts

Election precincts (also called election districts or voting districts) are areas defined by State and local governments for election purposes. Under a cooperative Census Bureau/State program and in accordance with Public Law 94-171, the Bureau, for the first time, provided data for 36,000 election precincts in 23 States that participated in the program. Other States could aggregate block data on their own to create election precinct statistics or use standard census geographical areas to meet their redistricting needs. (See Ch. 8, "Data Products and Dissemination," for more detail on the Public Law 94-171 data program.)

Neighborhoods

Another new type of area included in census tabulation plans was the neighborhood. The Neighborhood Statistics Program was developed to assist localities that wanted statistics for recognized subareas, generally called "neighborhoods." The guidelines for the program were first published in the *Federal Register* in November 1979, but changes relating to cost and coverage made it necessary to revise the guidelines several times; the final ones were issued in May 1982. Although the program was originally for municipalities, it was later extended to nonmunicipal areas covered by census blocks, specifically unincorporated parts of counties as well as towns and townships in the 11 States where these jurisdictions had general-purpose governments—Connecticut, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

While the primary purpose of the program was to provide data for neighborhoods with citizen participation groups, data also were presented for traditionally recognized neighborhoods where no formal citizen participation system existed. The neighborhoods had to be officially recognized (by the locality), have nonoverlapping boundaries, and cover most of the area of the governmental jurisdiction. The participating localities were responsible for the work and expense of completing a neighborhood block-equivalency listing, which defined neighborhoods in terms of census geographic areas. The Census Bureau provided tabulations to the localities without charge. (See Ch. 8, "Data Products and Dissemination" for more detail on the Neighborhood Statistics Program.)

STATISTICAL AREAS

Regions and Divisions

The 50 States and the District of Columbia have been grouped into nine divisions, with four to nine generally contiguous States in each, since the 1910 census. The makeup of the divisions has not changed since then, except for the addition of Alaska and Hawaii, which are part of the Pacific Division in the West Region

Appendix 3A. Geographic Areas

and are the only noncontiguous States. Since the 1950 census, data also have been reported for four regions (from 1910-1940, there were three). The West, North Central⁴ and Northeast Regions each contain two divisions and the South Region, three.

Figure 1. Census Regions and Geographic Divisions



Standard Metropolitan Statistical Areas (SMSA's)

An SMSA is a large population nucleus, together with adjacent communities that have a high degree of economic and social integration with that nucleus. An SMSA basically consists of an urbanized area and the county(s) in which it is located, provided that these "central counties" contain a population of at least 100,000 (75,000 in New England cities and towns). Contiguous outlying counties are included in an SMSA if they are socially and economically integrated with the central county(s). The outlying counties must have a specified level of commuting to the central county(s) and must also meet certain standards regarding metropolitan character, such as population density, urban population, and population growth. (In New England, cities and towns, rather than counties, are used in defining SMSA's.)

The SMSA classification is a statistical standard, developed for use by Federal agencies in the production, analysis, and publication of data on metropolitan areas. SMSA's are defined and designated by the OMB, following a set of official published standards developed by the Interagency Federal Committee on Standard Metropolitan Statistical Areas.

"Standard metropolitan areas" were first defined and designated in 1949 by the Bureau of the Budget (now the OMB) and the word "statistical" was added in 1959. The definition was developed to replace at least four different sets of statistical-area definitions then in use for various data series of the Bureau of the Census and other agencies. Because of the multiple definitions, it had not been possible to relate statistics on population,

industrial production, labor markets, and other series for a metropolitan area because each series encompassed different geographic areas. The criteria for establishing SMSA's have been revised periodically since 1949.

New standards for designating and defining SMSA's were published in the *Federal Register* in January 1980; some were applied to designate new areas as a result of the 1980 census, but most went into effect June 30, 1983. The word "standard" was dropped and the term "metropolitan statistical area" went into effect in 1983 (see table 1, n. 3); however, "standard metropolitan statistical area" was used in all 1980 census publications.

There were 247 SMSA's in the 1970 census, including 3 in Puerto Rico, a number which grew through new designations to 288, including 4 in Puerto Rico by January 1980. Thirty-six new SMSA's, including 1 in Puerto Rico, were designated on June 19, 1981, based on the 1980 census results, using the newly established criteria. Of the 288 precensus SMSA's, one—Rapid City, SD, which had been designated based on estimates—was dropped because it did not meet either the old or new criteria. Thus, for the 1980 census, there were 323 SMSA's, including 5 in Puerto Rico. As commuting and other sample data became available from the census, the boundaries of each SMSA were reviewed and, as a result, counties were added or deleted in June 1983, based on their level of commuting to the central counties and their degree of metropolitan character; these changes were not reflected in the 1980 census publications.

Most SMSA's had at least one central city. The titles of SMSA's included up to three city names, as well as the name of each State into which the SMSA extended. The Nassau-Suffolk, NY, SMSA had no central city and the Northeast Pennsylvania SMSA had three central cities: Scranton, Wilkes-Barre, and Hazleton, PA.

Metropolitan/Nonmetropolitan Population

The metropolitan population is defined as the people living within SMSA's; the nonmetropolitan population is that living outside SMSA's. Metropolitan population is largely urban, but contains some rural components. By the same token, some of the urban population lives outside metropolitan areas.

The 1980 U.S. metropolitan population (excluding Puerto Rico) was 169.4 million, or 75 percent of the total of 226.5 million. The land area of the 318 U.S. SMSA's was about 566,000 square miles, or 16 percent of the total.

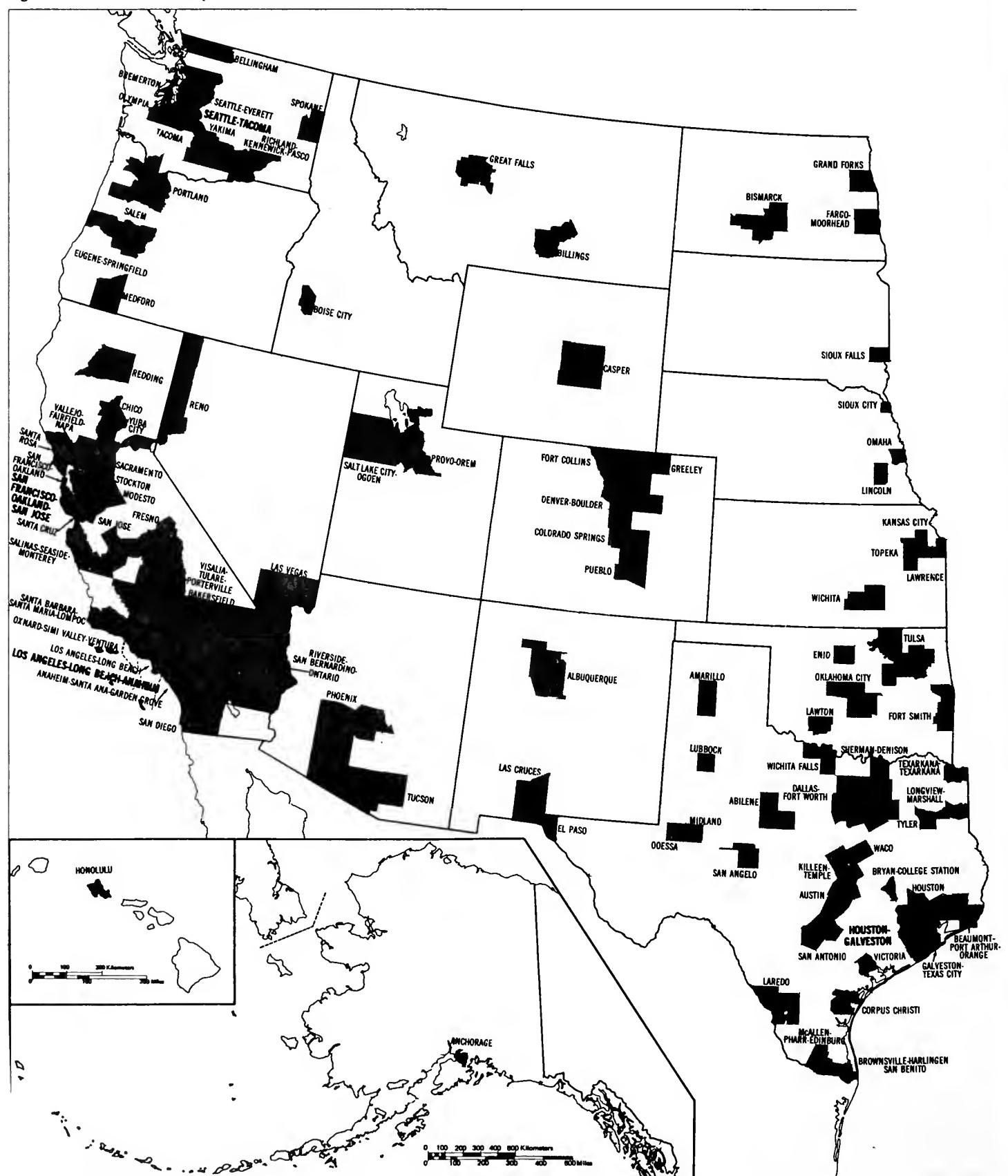
Standard Consolidated Statistical Areas (SCSA's)

SCSA's consist of two or more contiguous SMSA's that meet specific criteria of size, urban character, social and economic integration, and contiguity of urbanized area. They are essentially large metropolitan complexes in which sizable urban centers of independent origin are completely connected by urban development, so that there is no visible break between them. There were 17 SCSA's after the 1980 census, including 1 in Puerto Rico. Two were recognized in the 1970 census and 11 more were designated prior to 1980; based on the results of the census, 4 more SCSA's were defined, and 2 SMSA's were added to existing SCSA's. The new criteria implemented in 1983 for SMSA's also applied to SCSA'S (see table 1, n. 3).

⁴Renamed Midwest in June 1984.

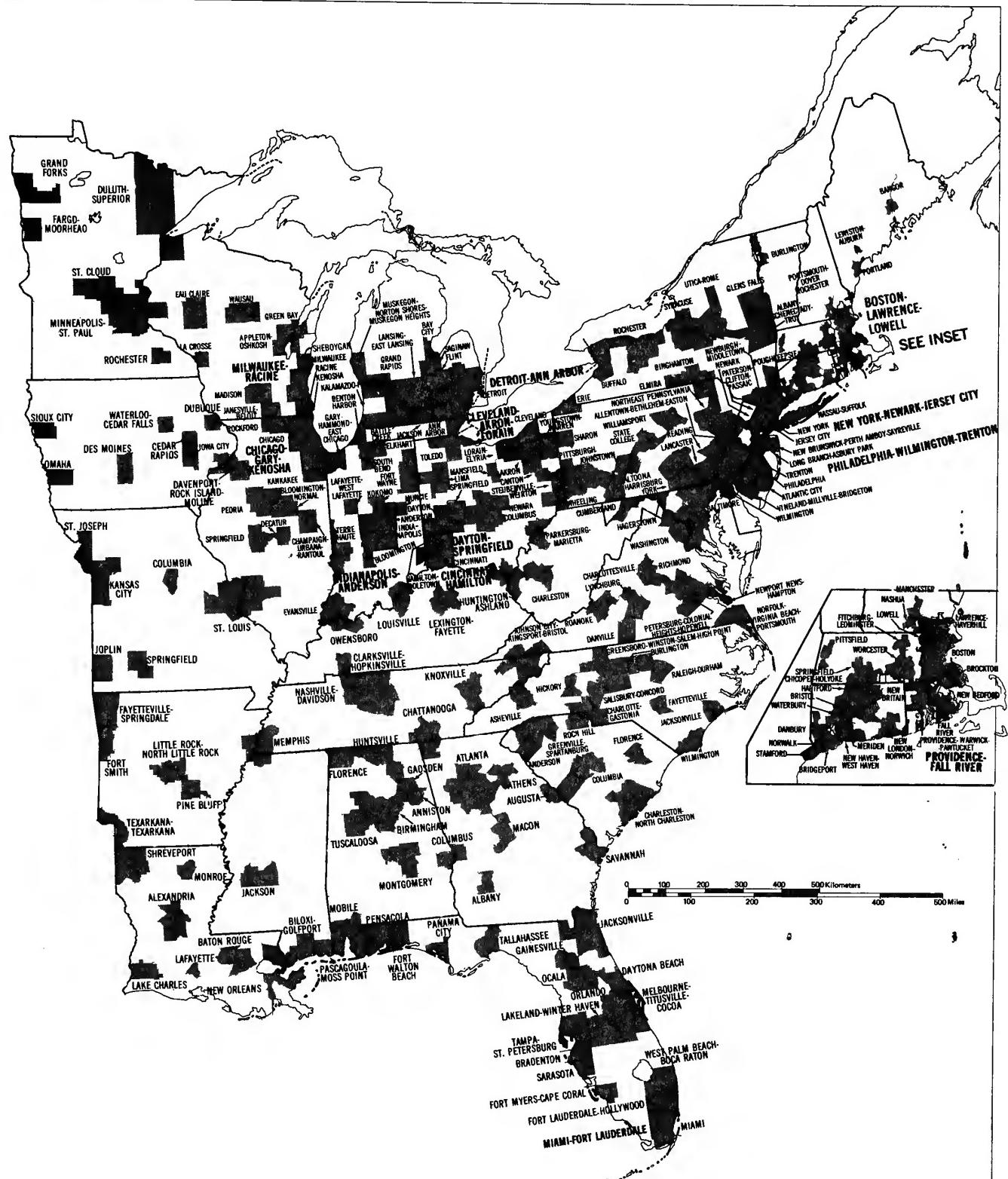
Appendix 3A. Geographic Areas

Figure 2. Standard Metropolitan Statistical Areas



U.S. Department of Commerce

Appendix 3A. Geographic Areas



BUREAU OF THE CENSUS

Appendix 3A. Geographic Areas

Urbanized Areas

Urbanized areas were first established for the 1950 census, primarily to distinguish the urban from the rural population in the vicinity of large cities where the urban population did not necessarily reside inside incorporated places of 2,500 inhabitants or more. Urbanized areas differ from SMSA's principally in that the urbanized areas include only the densely settled areas; SMSA's, which are composed of complete counties, often contain extensive rural territory.

For the 1980 census, an urbanized area contained a central city or cities, densely settled unincorporated territory adjacent to the central city, other adjacent incorporated places with dense settlement, and any contiguous parcels of nonresidential land devoted to urban land use (e.g., industrial parks, airports, etc.). The 1980 census qualifying criteria differed from those for 1970 in that all urbanized areas with 50,000 or more inhabitants were recognized regardless of the size of the central city, and the final delineations included more peripheral land areas devoted to urban land use. In 1970, the central city had to have at least 50,000 persons, or two adjacent cities had to have a combined population of at least 50,000, with the smaller one having a population of at least 15,000. A 1974 revision of the urbanized area criteria permitted designation of an urbanized area for a city of at least 25,000 population that, with contiguous places, had a combined population of at least 50,000 and a population density of at least 1,000 persons per square mile.

The urbanized area boundaries were based primarily on a density of at least 1,000 persons per square mile, but also included some less densely settled areas within corporate limits, and such areas as industrial parks and airports if they were within or adjacent to areas of dense urban development. The density level of 1,000 persons per square mile corresponded approximately to the continuously built-up area around a city. The "urban fringe" was that part of the urbanized area outside of the central city or cities.

Typically, an entire urbanized area is included within an SMSA. The SMSA is usually much larger in terms of territory and includes areas where the population density is less than 1,000. Occasionally, more than one urbanized area is located within an

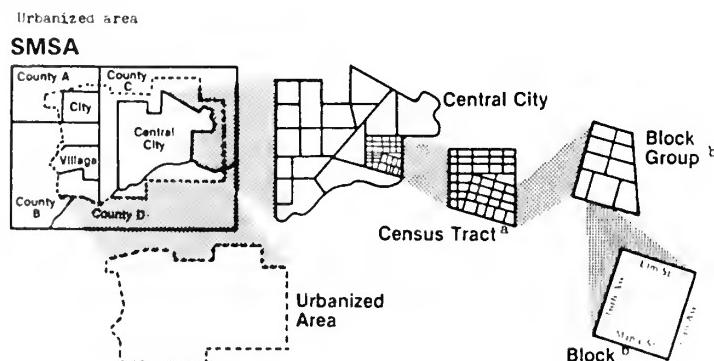
SMSA. In some cases, a small part of an urbanized area may extend beyond an SMSA boundary into an adjacent SMSA or into an area not in any SMSA. Twenty-three 1980 urbanized areas, including two in Puerto Rico, were defined in areas that did not meet the 100,000 total population criterion (75,000 in New England) for establishing SMSA's. Urbanized areas may cross State boundaries.

Urbanized areas were delimited on the basis of 1980 census results, rather than prior to the census. The population density for more than 400 potential urbanized areas was analyzed using 1980 census data, and based on this analysis 373 urbanized areas were designated, including 7 in Puerto Rico. This compares with 252 at the time of the 1970 census, including 4 in Puerto Rico, and 279 just before the 1980 census, including 4 in Puerto Rico.

As a basis for determining the extent of urbanized areas, an outer line was established for each urbanized area or potential urbanized area by examining the latest aerial photography, U.S. Geological Survey topographic quadrangle maps, and local data on population growth. The outer line encompassed all territory that appeared to meet the requirements of "urban" and extended into what clearly appeared to be rural territory. For already existing urbanized areas, an inner line was drawn approximating the 1970 boundaries, and the area within the inner line was automatically included in the 1980 urbanized area. The area between the inner and outer lines constituted the ring of potential growth for each urbanized area. This ring was subdivided into measurement units composed of one or more census blocks with a similar density of street development. Measurement units were included in or excluded from the final boundaries, depending on their population density, which was measured by using 1980 population and land area data.

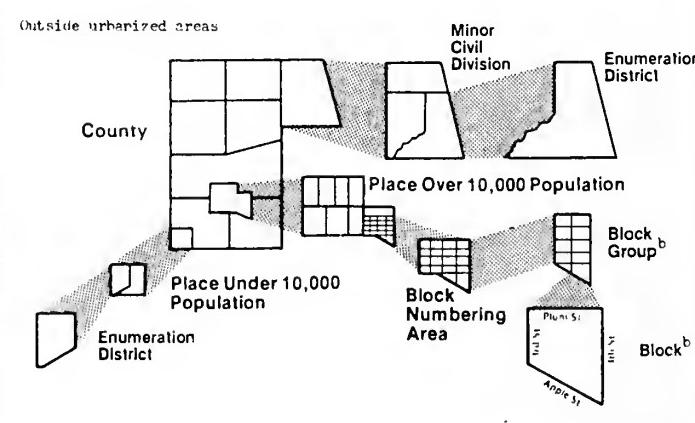
If it was determined that a sizable part of a place was rural in character, that part could be excluded from the urbanized area. The 87 cities thus classified as part urban and part rural were called "extended" cities. An extended city was defined as one that contained one or more areas that were each at least 5 square miles in extent and had a population density of less than 100 persons per square mile. These areas had to constitute at least 25 percent of the land area of the legal city or a total of 25 square miles or more.

Figure 3. Urbanized Areas



^aThe entire MSA is subdivided into census tracts.

^bBlocks and block groups do not have symbolized boundaries as do the other areas, but are identified by number.



Appendix 3A. Geographic Areas

Urbanized areas covered about 52,000 square miles, or about 1.5 percent of the land area of the United States. The population in urbanized areas was 139.2 million, or 61.4 percent of the U.S. total.

Urban/Rural Population

The urban area of the United States comprises all urbanized areas and places of 2,500 or more inhabitants outside urbanized areas. The 1980 urban population was 167 million, or 74 percent of the total. The urban land area was about 74,000 square miles, or 2 percent of the total. All other areas were considered rural. The rural population was subdivided between farm and non-farm, based on answers to an item (H15) on the census sample (or long form) questionnaire which asked the number of acres on which a housing unit was located and the amount of income from sales of crops, livestock, and other farm products. (See ch. 12 for content items.) "Farm" was the designation for persons who resided on a place of one or more acres and had \$1,000 or more in sales of crops, livestock, and farm products from the place in 1979; everyone else was considered "nonfarm."

Census County Divisions (CCD's)

CCD's are county subdivisions that have been defined in each census since 1950 in States where there are no legally established MCD's, where the boundaries of MCD's change frequently, and/or where the MCD's are not generally known to the public. The CCD's were defined by the Census Bureau in cooperation with State and county officials and Census Statistical Areas Committees. The CCD's have generally been designed, using published guidelines, to represent community areas focused on trading centers or to represent major land-use areas, and to have visible, permanent, and easily described boundaries.

There were just over 7,000 CCD's in 21 States at the time of the 1970 census. The withdrawal of North Dakota from the CCD program and the consolidation of CCD's in many metropolitan areas resulted in a reduction in the total number to about 5,500 in 20 States for 1980. The States that contained CCD's were: Alabama, Arizona, California, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Kentucky, Montana, New Mexico, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Washington, and Wyoming.

CCD's in about three-fourths of the counties were revised for the 1980 census. Most revisions involved minor boundary adjustments where a feature used as a boundary in 1970 (a road, railroad, stream, etc.) had changed in alignment or disappeared altogether by 1980. Other changes were made to adjust CCD boundaries that coincided with the limits of incorporated places to avoid having to revise them constantly because of annexations. Major changes were made in SMSA counties where CCD's were combined and/or the CCD boundaries were adjusted to coincide with census tract boundaries.

Census subareas, which were similar to CCD's, were delineated for Alaska in a cooperative venture by the Bureau and the State. These areas replaced the "subdivisions" used in the 1970 census.

Census Designated Places (CDP's)

In each census beginning with 1950, the Census Bureau delineated boundaries for closely settled population centers

without corporate limits.⁵ In 1950, 1960, and 1970, these were called "unincorporated places"; for 1980, the name was changed to "census designated places" to make it explicit that such places are defined for census purposes and to avoid confusion in States where such places are part of incorporated MCD's (towns or townships). CDP's contain a city-type street pattern, and generally have a minimum population density of 1,000 persons per square mile. The typical CDP is a community identified locally by its place name that developed over the years to become a commercial or market center, in contrast to a subdivision, apartment development, or general urban-expansion area.

To be recognized in the 1980 census, CDP's had to meet minimum population criteria as follows.

Area	Minimum CDP population
Alaska	25
Hawaii, Virgin Islands, Guam, 14 Northern Mariana Islands, and the remainder of the Trust Territory of the Pacific Islands	300
Puerto Rico	*5,000
All other States:	
Inside urbanized areas:	
With one or more cities of 50,000 or more	5,000
With no city of 50,000 or more	1,000
Outside urbanized areas	1,000

In 11 States, some CDP's were coextensive with MCD's in urbanized areas: Connecticut, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin. To qualify for identification as a coextensive CDP, an MCD (town or township) had to have a minimum population of 1,000 and at least 80 percent of its land area and 95 percent of its population within an urbanized area.

To report data for all qualified CDP's, the Bureau, prior to the enumeration, delineated as potential CDP's communities with an estimated population of at least 800 in areas where a minimum of 1,000 population was required for publication. In areas where the publication criterion was 5,000, potential CDP's were delineated if they had an estimated population of at least 4,500.

Comprehensive files were established in 1978 for approximately 5,000 potential CDP's. The primary sources for the files were the 1970 unincorporated place files, commercial atlases for 1977 and 1978, and information received from local sources. Officials designated by the Governor of each State revised and added to these listings, and provided maps or map revisions for all CDP's outside SMSA's estimated to have 800 or more inhabitants, following procedures provided by the Bureau. The Census Statistical Areas Committees assisted in revising and updating the boundaries for CDP's in the SMSA counties. As in the 1970 census, concentrated residential areas within military reservations were recognized as CDP's. Maps and population estimates for these places were obtained from the Department of Defense.

⁵Figures for unincorporated places were also published in the 1940 census, but the places were identified and delineated by the enumerators during the census rather than by headquarters personnel.

"CDP's in Puerto Rico were called aldeas (referred to as villages in 1970), and required a minimum of 1,000 persons, regardless of whether they were inside or outside urbanized areas. Municipio centers, referred to as "zonas urbanas" (previously called cities and towns), qualified regardless of population size.

Appendix 3A. Geographic Areas

The Bureau applied specific criteria for CDP's to determine whether a proposed CDP should be recognized and what its acceptable boundaries were. In delimiting CDP's, great care was used to designate as boundaries readily identifiable features such as highways, streets, streams, power lines, and, in mountainous areas, clearly defined ridgelines. More than 4,600 CDP's were designated in the United States, and 3,432 qualified for recognition in 1980 census publications; 301 additional CDP's and equivalents were designated in Puerto Rico and outlying areas and 273 qualified for publication.

Census Tracts

Census tracts are small statistical areas delineated by Census Statistical Areas Committees (CSAC's) in cooperation with and following guidelines provided by the Census Bureau. A census tract includes, on the average, about 4,000 residents, generally within a range of 2,500 to 8,000. A census tract may contain more than 8,000 people if the population is homogeneous and if there is no benefit in further subdividing the tract; in some instances, especially in central business districts of large cities, they may have fewer than 2,500 persons. The residents generally have similar social characteristics, economic status, and/or living conditions at the time the tracts are established.

Census tracts never cross county lines; within counties they may, but generally do not, coincide with MCD or place boundaries except in areas where legal boundary changes are rare. It is intended that census tracts remain reasonably stable from census to census so that historical comparability of data is retained. Thus, most boundaries are visible features that are easily identifiable and unlikely to change.

Census tracts were created for use in eight cities in the 1910 census. Tract data were first published in the 1940 census; by that time, 60 cities were included in the tract program, which was expanded greatly in subsequent censuses. Prior to 1940, such data were collected but not published; each city paid for its own tabulations. For the 1980 census, census tracts were established to cover in their entirety all SMSA's that had been established by January 1, 1980, many areas designated as potential SMSA's, and selected other counties that were adjacent to an SMSA and/or were highly populated. Five States—Connecticut, Delaware, Hawaii, New Jersey, and Rhode Island—and the District of Columbia were covered entirely by census tracts.

In 1975, the Bureau began to work with CSAC's to establish census tracts in qualifying areas that lacked census tracts and to review the structure of existing tracts for the 1980 census. The deadline for submitting new tract proposals was December 31, 1975, and the deadline for submitting revisions in areas that already had tracts was June 30, 1976. Revisions usually took the form of splitting tracts so that comparability between censuses was maintained, although in a few cases extensive redrawing of boundaries was undertaken. About 8 percent of the 1970 tracts were split for 1980. Bureau staff reviewed the local proposals to assure maintenance of a national standard. Bureau approval of a local plan was documented in the form of a manuscript map. The approved plans were then used in plotting tract boundaries on maps for enumeration and tabulation purposes.

For the 1980 census, there were about 43,200 census tracts in the United States, compared to the 34,500 recognized in 1970.

The number of tracts in SMSA's was about 40,000 and the number outside SMSA's was about 3,000. Approximately 80 percent of the population of the United States and 21 percent of the land area were in counties and county equivalents with census tracts.

Of the 323 SMSA's recognized in the census, 316 were completely covered by census tracts. Only the central counties had census tracts in the remaining seven SMSA's, all of which were newly designated: Arecibo, PR, Athens, GA, Bangor, ME, Burlington, VT, Charlottesville, VA, Cumberland, MD-VA, and Hickory, NC.

Census tracts are identified by a four-digit basic code, and some have a two-digit suffix. Leading zeros in a tract number (e.g., 0025.02) do not appear on census maps. Tract numbers always are unique within a county and, except for the New York SMSA, also are unique within an SMSA. All valid census tract numbers are in the range 0001 to 9899.99. A ".99" suffix indicates a tract to which only shipboard population was assigned.

Block-Numbering Areas (BNA's)

About 3,300 BNA's were established to provide a framework for numbering blocks in areas that did not have census tracts. They were used in urbanized areas that extend into untracted counties, places of 10,000 or more inhabitants outside of tracted areas, and in untracted areas participating in the contract block program. BNA's were numbered from 9901 to 9989.99. Again, a ".99" suffix indicated a BNA to which only shipboard population was assigned.

Enumeration Districts (ED's)

ED's are the basic administrative units for census field operations and cover the entire country. ED's are also tabulation units for nonblock-numbered areas and are equivalent to block groups, which are tabulation units for blocked areas.

Generally, an ED comprises the workload for a single enumerator; however, many ED's are of necessity considerably smaller in population than the optimum size. For the purpose of delineating ED's, the optimum size was set at 325 housing units in centralized district office areas; 550 housing units in decentralized office areas; 275 housing units in conventional office areas; and 70-100 housing units on American Indian reservations and in Puerto Rico and the outlying areas. ED's generally did not exceed 300 square miles in area, except in Alaska.

The other basic criterion in establishing ED's was that they could not cross the boundaries of the following higher-level geographic areas: State, county, MCD/CCD, place, census tract or BNA, district office, congressional district, American Indian reservation or subreservation area, Alaska Native village, the outer line of an urbanized area, the outermost extent of contract block areas, the limit of TAR areas, or election precincts (outside of block-numbered areas).

ED's in TAR areas were structured by computer at the Bureau following the size and boundary criteria mentioned.⁷ Local communities were given an opportunity to participate in the delineation of ED's outside of the potential extent of urbanized areas, but their proposals had to meet the Bureau's criteria. In SMSA's,

⁷Except for Indian reservation, military installation, and crews-of-vessels ED's, which were clerically delineated even though located in TAR areas.

Appendix 3A. Geographic Areas

priority in delineating ED's was given to the CSAC's. Elsewhere, if a State was participating in the election precinct program, its plan was given precedence over local plans. In all cases where two or more local agencies or governmental units covered the same area, they were informed of the other agency's participation so that they could attempt to develop a mutually acceptable ED plan. The local ED program was announced in the Bureau's *Data User News* in December 1976, and an informational package was sent to participating localities in March 1977. The deadline for submitting ED plans to the Bureau was October 1, 1977.

ED data were tabulated for the 102,000 ED's in nonblock-numbered areas of the United States, Puerto Rico, and the outlying areas. No data were made public for the 238,000 ED's in block-numbered areas of the United States and Puerto Rico; rather, data were provided by block groups. ED's are identified by a four-digit basic number, including leading zeros; however, the leading zeros were not shown on the census maps. ED numbers were not shown in block-numbered areas on public versions of the 1980 census maps. ED numbers were unique within district office and within county. Some ED's had a one-letter suffix to facilitate the separate identification of unique geographic areas whose existence was only determined after the original delineation or to expedite field or processing operations; for example, an ED may have contained far more people or housing units than estimated and therefore had to be "split" to facilitate enumeration and/or processing. ED's also could have a one-letter prefix, but this was not an integral part of the ED number. The prefix identified ED's in which special enumeration and tabulation procedures were to be used, for example, ED's on American Indian reservations were prefixed "N."

Block Groups

Data were tabulated for about 200,000 block groups (or parts of block groups) in block-numbered areas of the United States and Puerto Rico. Block groups, which were subdivisions of census tracts or BNA's, were defined by the first digit of the three-digit block numbers. For example, all blocks numbered in the range 101 to 199 in a census tract or BNA would constitute block group 1 (or that portion of block group 1 within a specified area, such as a city, if the block group was split by a higher-level geographic boundary).

Blocks

Blocks are the smallest geographic area for which data are collected. A block is usually a well defined rectangular piece of land bounded by streets and roads; however, it may be irregular in shape and bounded by physical features such as railroad tracks

or streams. Blocks do not cross the boundaries of counties, tracts, or block numbering areas; thus, some blocks may be bounded by nonphysical features such as political or statistical boundaries. Blocks may cross place and county subdivision boundaries. Only selected statistics based on the complete-count part of the census were published for blocks, and no sample data were available at this level.

Block statistics were published for all urbanized areas, including the territory within the outer line beyond the final urbanized area, all incorporated places of 10,000 or more people (as of the 1970 census or an official Bureau estimate through 1976), and any other areas that contracted with the Bureau to provide block-level data. Under the contract block statistics program, data were tabulated by block for five entire States: Georgia, Mississippi, New York, Rhode Island, and Virginia. All contract work involved reimbursement of cost to the Bureau by the requesting area's government, but if any incorporated place for which there was such a contract with the Bureau in advance of the 1980 census reached a population of 10,000 or more in the census, its contract fee was refunded. The fees ranged from \$500 to \$700 for areas under 10,000 people, and the cost for an area with a population of 10,000 or more (such as a State) was determined on an individual basis.

Each block was identified by a three-digit number that was unique within a census tract or BNA. Blocks were numbered from 101 to 999, but 300, 400, 500, 600, 700, 800, and 900 were never used and 990-999 were rarely used; 100 (civilian) and 200 (military and Coast Guard) were used for shipboard populations in blocknumbered areas. If a place contained blocks, it was block-numbered in its entirety, except in a few cases where only the portion of a place in a contracting county was blocked; other areas—counties, MCD's, tracts, etc.—were only partially block-numbered in many cases. The nonblock-numbered portion of the county was actually block-numbered (001-099), but only for administrative purposes in the field operations. These block numbers appeared only on the enumerator maps and no data were tabulated for them.

In many areas, most block boundaries and numbers were the same in 1980 as in 1970. In a few SMSA's, blocks were renumbered extensively by GBF/DIME-file coordinating agencies to define more optimal block groups. Some 1970 blocks had new boundaries for 1980, primarily because street patterns had changed. Wherever a block was redefined by splitting or other adjustment, the 1970 block number usually was not reused, to help data users notice the change.

There were 2,458,000 uniquely numbered blocks. Blocks that were split by boundaries of higher-level geographic areas had data tabulated for each portion, resulting in data for more than 2,520,000 blocks and block parts.

Appendix 3B. Advance Post Office Check Cards

Form D-700A (buff)

<p>A. MAKE NO MARK ON THIS CARD IF THE ADDRESS SHOWN (INCLUDING CARRIER ROUTE NUMBER) IS CORRECT FOR AN OCCUPIED OR VACANT LIVING QUARTERS. OTHERWISE, MARK AN "X" IN THE APPROPRIATE BOX BELOW, EXCEPT BOX 5.</p> <p>3 <input type="checkbox"/> CORRECTED AS SHOWN IN PART B → (Make any corrections on the label except house number. If house number is wrong, mark box 7 and complete a blue card (D-702) for the correct address. If this address is for a special place and the name is omitted, enter it below.)</p> <p>Special place name <input type="text"/> Code <input type="text"/></p> <p>4 <input type="checkbox"/> DUPLICATE 5 <input type="checkbox"/> MIS-SORT (Give to supervisor - DO NOT mark the box) 6 <input type="checkbox"/> BUSINESS ONLY (No living quarters) 7 <input type="checkbox"/> UNDELIVERABLE - Give reason ↴</p>	<p>B. MAILING ADDRESS</p> <p>FORM D-700A (11-1-78)</p> <p>U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS</p> <p>ADDRESS CARD 20th Decennial Census - 1980</p> <p>The release of this information to the Census Bureau is authorized under 39 CFR 266.4(b)(2)(v).</p>
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Form D-700C (yellow)

<p>A. MAKE NO MARK ON THIS CARD IF THE ADDRESS SHOWN (INCLUDING CARRIER ROUTE NUMBER) IS CORRECT FOR AN OCCUPIED OR VACANT LIVING QUARTERS. OTHERWISE, MARK AN "X" IN THE APPROPRIATE BOX BELOW, EXCEPT BOX 5.</p> <p>3 <input type="checkbox"/> CORRECTED AS SHOWN IN PART B → Make any corrections in part B except house number. If house number is wrong, mark box 7.</p> <p>4 <input type="checkbox"/> DUPLICATE 5 <input type="checkbox"/> MIS-SORT (Give to supervisor - DO NOT mark the box) 6 <input type="checkbox"/> BUSINESS ONLY (No living quarters) 7 <input type="checkbox"/> UNDELIVERABLE - Give reason ↴</p>	<p>B. MAILING ADDRESS</p> <p>FORM D-700C (3-12-79)</p> <p>U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS</p> <p>ADDRESS CARD 20th Decennial Census - 1980</p> <p>The release of this information to the Census Bureau is authorized under 39 CFR 266.4(b)(2)(v).</p>
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Appendix 3B. Advance Post Office Check Cards

Form D-702 (blue)

(front)

1. House No.	2. Direction prefix	Street name or rural route and box No.			Direction suffix	9. If nearest address on same side of street is on a pink card, enter that control number below.			
						D.O.	ED	Serial No.	CD
3. Street type (Mark (X) one) <input type="checkbox"/> Street <input type="checkbox"/> Road <input type="checkbox"/> Avenue <input type="checkbox"/> Boulevard <input type="checkbox"/> Lane <input type="checkbox"/> Other _____					7. Apartment, trailer, or mobile home designation (if any)		<i>If address is rural route and box number, complete 10 and 11.</i>		
4. City		S. State	6. ZIP code	<i>If multiple adds at this address (items 1-6) mark this box and fill item 14 on reverse.</i>		10. Full name of householder (if known)			
8. If special place, enter name					Code	11. Physical location (road name and/or other distinguishing landmarks)			
FORM D-702 (10-25-78) U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS POST OFFICE REPORT OF MISSING ADDRESS 20th Decennial Census - 1980					CENSUS USE ONLY			12. Emp. initials	13. Route No.
D.O.		ED	Serial No.	BL					

The release of this information to the Census Bureau is authorized under 39 CFR 266.4(b)(2)(v).

☆U.S. GOVERNMENT PRINTING OFFICE: 1979-658-265

(back)

If more than one card is needed, fill items 1-7 on each card and secure them together.

Card _____ of _____ Cards

14. List the apartment, trailer, or mobile home designation for each housing unit at this address for which you did not receive an address card.

FORM D-702 (10-25-78)

Make sure all applicable items (8 through 13) on front of card are completed where appropriate.

Appendix 3C. Prelist Address Register

BOOK _____ OF _____ BOOKS		U.S. DEPARTMENT OF COMMERCE U.S. BUREAU OF THE CENSUS	
PRELIST ADDRESS REGISTER 20th Decennial Census—1980			
Form D-101 (5-17-78) P		NOTICE F - Your report to the Census Bureau is confidential by law (title 13, U.S. Code). It may be seen only by sworn Census employees and may be used only for statistical purposes.	
1. IDENTIFICATION a. ED No. b. Tract No. c. District Office d. County e. State		Code Code Code Code Code	
2. ASSIGNMENT INFORMATION			
Name e. Crew leader b. Enumerator c. Reassignment enumerator(s)		Address Telephone No. Date assigned C.I., District No.	
3. ENUMERATOR'S DAILY PROGRESS RECORD			
a. Month of listing b. Date of listing c. Living Quarters listed today d. Living quarters listed to date			
NOTICE TO FINDER - This book is the property of the United States Government. Please mail it to the address shown below. Postage is prepaid.			
From (Finder's name and address) _____ _____ _____		Method of payment - Enumerator: The entry below shows your method of payment, your payroll form shows your rate of pay.  1 <input type="checkbox"/> Piece rate only 3 <input type="checkbox"/> Piece rate, time enroute, and mileage 2 <input type="checkbox"/> Piece rate and mileage 4 <input type="checkbox"/> Hourly rate and mileage	
1980 pay code			
1 <input type="checkbox"/> ~ 3 <input type="checkbox"/> 2 <input type="checkbox"/> 4 <input type="checkbox"/>			
4. PAYROLL INFORMATION			
5. POSTAL CORRECTIONS a. Date completed b. Initials c. No. of postal adds			
6. QUALITY CONTROL			
a. No. of listing check errors b. Recanvassed (Mark X below)		c. Total pages with entries (Include special piece pages.) <input type="checkbox"/>	

Appendix 3C. Prelist Address Register

Form D-101 (inside cover)

RECORD OF FIRST REVIEW	
Review the ED map and Prelist Address Register and rate the enumerator on the following aspects of the job.	
Mark (X) one	
Yes	No
1. Is the enumerator –	
a. Canvassing and listing block-by-block in a systematic manner?	
b. Canvassing one side of a street or road at a time?	
c. Staying within the ED boundaries?	
d. Updating the map or drawing insert sketches when necessary?	
e. Making address register entries in a legible manner?	
f. Spotting serial numbers on the map for each listing or writing "(No LQ)" along any canvassed road section with no map spots?	
g. Circling block numbers on the map for each canvassed block?	
h. Entering a complete mailing address for each listing?	
i. Listing special places and clusters as prescribed?	
j. Completing an average of at least 60 listings per day?	
RESULTS <input type="checkbox"/> SATISFACTORY <input type="checkbox"/> NEEDS IMPROVEMENT <input type="checkbox"/> UNSATISFACTORY	
<p>The enumerator should continue working and no additional review is necessary before Final Review.</p> <p>The enumerator should continue working, but an additional review must be made before Final Review. Arrange to meet the enumerator again and review the work for all items marked "No" during First Review.</p> <p>The enumerator is unable to do the job and should be replaced. Tell the enumerator to STOP working until you are able to see him/her again. Discuss the situation immediately with your supervisor.</p>	
Notes	

RECORD OF FINAL REVIEW	
Complete this review for each Prelist Address Register turned in.	
Crew leader Mark (X) one	Office Mark (X) one
Yes	No
1. Look at the ED map	
a. Does map spotting show the ED was listed block-by-block in a systematic manner?	
b. Are all serial numbers and special place control numbers spotted?	
c. Have cancelled serial and control numbers been erased from the map?	
d. Do all road sections contain map spots or the entry "No LQ"?	
e. Has the map been updated or insert sketches drawn when necessary?	
f. Are "cluster" addresses properly spotted?	
g. Are all block numbers circled?	
2. Look at each address listing page	
a. Is column (1) the same for the entire page?	
b. Does the first line on each completed page carry a full street name in column (3) or "No living quarters" in columns (1a) and (2)?	
c. Are vertical lines used when an entry is repeated?	
d. Does each address have legible and consistent entries in columns (2) through (5d)?	
e. Are special places listed on the Special Place Address Listing Pages?	
3. Advance listing Check	
a. Were all but zero or one advance listing found and listed by the enumerator?	
RESULTS	<input type="checkbox"/> PASSED <input type="checkbox"/> FAILED
Notes	

Appendix 3C. Prelist Address Register

Form D-101A

Appendix 3C. Prelist Address Register

Form D-101B

Block No.	Control No. (Spot on map)	Name of Special Place (3)	House No. (4)	Street name, Rural Route and Box No., or Lockbox No. (5)	POST OFFICE		Type of Special Place (7)	Remarks (8)
					Name (6a)	State (6b)		
	SP-1							
	SP-2							
	SP-3							
	SP-4							
	SP-5							
	SP-6							
	SP-7							
	SP-8							
	SP-9							
	SP-10							
	SP-11							
	SP-12							
	SP-13							
	SP-14							
	SP-15							
	SP-16							
	SP-17							
	SP-18							
	SP-19							
	SP-20							

Form Approved: O.M.B. No. 41-578061

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

(9) D.O. No.
(10) ED No.
(11) ED page 1 OF

SPECIAL PLACE ADDRESS LISTING PAGE
20th Decennial Census - 1980

Form D-101B
GPO: 1980 OMB NO. 41-578061

Appendix 3C. Prelist Address Register

Example page for enumerators's reference

Example of a listed block

Appendix 3D. Prelist Office Sites

PRELIST OFFICE	STATES COVERED ¹
Boston Regional Census Center (RCC) Rochester, NY	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont New York (part)
New York RCC	New Jersey (part), New York (part)
Philadelphia RCC Annapolis, MD	New Jersey (part), Pennsylvania Delaware, Maryland
Detroit RCC Columbus, OH	Michigan Ohio
Chicago RCC Springfield, IL Indianapolis, IN Louisville, KY	Illinois (part) Illinois (part) Indiana Kentucky
Kansas City RCC Topeka, KS Des Moines, IA St. Paul, MN Madison, WI	Missouri Kansas Iowa Minnesota Wisconsin
Seattle RCC	Idaho, Montana, Nevada, North Dakota, Oregon, Utah, Washington
Charlotte RCC Raleigh, NC Columbia, SC Charleston, WV Richmond, VA	North Carolina (part) North Carolina (part) South Carolina Virginia (part), West Virginia Virginia (part)
Atlanta RCC Tallahassee, FL Tampa, FL Birmingham, AL Nashville, TN	Georgia Florida (part) Florida (part) Alabama Tennessee
Dallas RCC Austin, TX Baton Rouge, LA Little Rock, AR Jackson, MS	Texas (part) Texas (part) Louisiana Arkansas Mississippi
Denver RCC Phoenix, AZ Oklahoma City, OK Omaha, NE	Colorado, New Mexico Arizona Oklahoma Nebraska, South Dakota
Los Angeles RCC San Jose, CA	California (part), Hawaii California (part)

¹There were no prelist offices in Alaska, Wyoming, the District of Columbia, Puerto Rico, and the outlying areas.







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